

RAILWAY AGE

How Much "Public Works" Can We Afford?

The recent signing of the treaty between the United States and Canada for the construction of the so-called "Great Lakes-St. Lawrence seaway" raises a question as to whether the inclination to spend the taxpayers' money upon public works has not become a mania with many public men, and, if so, as to whether and how it can be cured. President Hoover, members of his cabinet, and some leaders in Congress recently fought valiantly to prevent that body from issuing bonds for expenditures upon postoffice buildings, waterways and other public works which they declared would threaten with destruction the credit of the federal government. President Hoover immediately afterward signed the Great Lakes-St. Lawrence waterway treaty.

The government board of engineers' estimate of the cost of this project to the American taxpayer is 250 million dollars, but it is notorious that in every part of the world the cost of constructing or improving waterways always has greatly exceeded the government estimates. The Great Lakes-St. Lawrence project has been repeatedly studied by economists and engineers not employed by or subservient to the Canadian or United States governments, and in every instance they have reached the conclusion that its cost would greatly exceed the estimates of the government engineers, and that, from an economic standpoint, it would be a complete failure.

The Great Lakes-St. Lawrence "Seaway"

The studies made by Doctor H. G. Moulton, president of the Brookings Institution, and two associates; by two Canadian engineers employed by the Montreal Board of Trade, and by Doctor W. T. Jackman, professor of transportation of the University of Toronto, have been summarized in articles published in the issues of the *Railway Age* of July 27, 1929, January 11, 1930, and April 9, 1932. One of the principal conclusions of Doctor Moulton and his associates was that the development of this so-called "seaway", which never would be used excepting by a very small number of sea-going vessels, would reduce freight rates

on wheat exported from the United States not more than 4 cents a bushel, while the taxes levied to effect this reduction would average at least 11 cents a bushel. The conclusions reached by Messrs. Holgate and Jamieson, the engineers employed by the Montreal Board of Trade, and by Doctor Jackman were similar. President Hoover, in signing the treaty, predicted that the increase in traffic within the next ten years would "far more than compensate for any diversions from American railways and other port facilities". There is no basis in transportation experience during the last ten years or in business prospects for this prediction, and it would make no difference if there was. Whatever the prospects of traffic may be, why should the people of Canada and the United States under present and prospective conditions be saddled with an additional burden of debt of probably one billion dollars, together with interest and maintenance costs, to secure a reduction in freight rates which competent non-government investigators believe would amount to only about one-third of the increase in taxes that consummation of the project would cause?

Many persons, including many men in public life, seem to believe there is some magic in government investment of capital which is not inherent in private investment, but if there is any such magic it is due entirely to the greater genius of government for wasting and destroying the people's capital. Public works are roughly divisible into three classes,—first those such as parks and playgrounds which are intended to provide places of rest and recreation for the public; secondly, those for educational purposes, and, third, those having exclusively economic purposes. It is not always possible to say to just what extent a public improvement such as a boulevard falls into these different classes, but the classification is sufficiently definite for purposes of discussion. The first two classes of public works are never what President Hoover has called "self-liquidating", while the third class always ought to be completely self-liquidating. Public works for recreational and educational purposes are desirable, but much more can be spent

upon them than the taxpaying public can afford, and experience has demonstrated that this recently has been done in the United States.

Economic Effects of Public Works

There is no difference whatever in the economic principles involved in government investment and private investment in property having economic purposes. Highways, waterways and public buildings are constructed and improved for economic purposes, and if the investment made in them is excessive the result will be the same as that of excessive investment of private capital in railroads and private buildings—namely, disaster. An investment in the construction or improvement of private property, to be of advantage to the public, must increase the total income or reduce the total expenses of the nation enough to produce at least interest upon the investment and taxes for the support of government, and if an investment by government in public works does not produce a return equivalent to that which would be produced by an equal private investment, then, to the extent of the difference in results, the people's capital invested by the government is wasted and lost.

Nobody knows the total amount that has been invested by our local, state and national governments in public works of all kinds during the last ten years; but it has been enormous, and it seems by no means improbable that if a thorough survey of all the results were made the conclusion would be unavoidable that it has been the principal cause of the economic collapse from which the people of every class and community have been suffering during the last three years.

The Cost of Highways

There appears elsewhere in this issue of the *Railway Age* a very remarkable article written by Doctor C. S. Duncan, economist of the Association of Railway Executives, entitled, "Who Pays For the Highways?". Most of the statistics heretofore presented in discussions of highway transportation have related only to highways outside of cities, and the propagandists of the bus and truck interests have tried to restrict the statistics used to those relating merely to the main highways—the so-called "state highways". But buses and trucks operated for commercial purposes, as well as private automobiles, use all highways. These include federal aid state highways with a total of 324,000 miles, the expenditures upon which in the eight years ending with 1930 were \$2,898,000,000; other highways (county and local roads) with 2,685,000 miles, the expenditures upon which were \$5,215,000,000; and city streets with 260,000 miles, the expenditures upon which were \$6,438,500,000. The expenditures made upon all these highways in eight years totaled almost \$19,000,000,000, or about three-fourths as much as the entire investment made in all our railroads in 100 years. Doctor Duncan answers the question, "Who pays for the highways?" by showing that

only 22 per cent of this enormous sum was collected from so-called motor vehicle and gasoline "taxes," while the remaining 78 per cent, or \$14,551,000,000, was secured by taxing real estate, other property, and incomes, and through the issuance of bonds. During the decade ending with 1932 these expenditures upon all highways, including city streets probably will amount of 24 billion dollars, and a huge part of all the indebtedness under which local and state governments are staggering has been incurred in raising money for this purpose.

How much has the total tax burden imposed upon the public been made by expenditures upon all public works, including waterways, parks, golf courses, bathing beaches, school buildings, postoffice buildings, and so on, ad infinitum? How much of an economic return is the public getting from its huge investment in them? If it had been made in the construction or improvement of private property, such as manufacturing plants, railways, farms, and turnpikes collecting tolls, the total taxes that would have had to be paid from incomes derived from private business would have been billions of dollars less than they have been, while there would have been billions of dollars more of private property from which to collect taxes. If the investment had been made in private property, which did not yield enough return to pay not only its fair share of taxes but also interest, it would have virtually bankrupted the nation. Is it not a fact that the capital has been taken from the people and actually so invested by our governments as to have produced this very result? If so, how can the public, after the terrible experience of the last three years, believe the federal government is warranted in adding another half billion dollars to the nation's present crushing investment in public works by participating in the Great Lakes-St. Lawrence waterway project, which seems certain to be unprofitable?

How to Reduce Taxes

There is a great deal of talk about curtailing government expenditures by abolishing bureaus, reducing government offices, and so on. The savings that can be made in these ways will not be a drop in the bucket as compared with the reductions of government expenditures that must be made if there is to be any appreciable reduction of taxes. If large reductions of taxes are to be made, the really large expenditures of government must be reduced. There are not going to be any large reductions of taxes if the federal government is going to continue to disburse probably 500 million dollars a year more in soldiers' bonuses than is warranted, if the national and state governments are going to continue to sink hundreds of millions of dollars annually in waterways, highways, and public buildings of doubtful or no economic value, and if local governments are going to continue to squander immense sums on educational facilities that contribute almost nothing toward the real education of the people's

children. Those who demand large reductions of such government expenditures will be met with the easy answer that they are "opposing progress". Does the depression of the last three years indicate that it is progress to travel the road to national bankruptcy? Is it progress to provide public works which can be created only by taxing private business and finance to death?

The public can afford to have only those public works for recreational and educational purposes for which it can afford to pay out of its income. It can afford to have only those waterways, highways, public buildings, and other public works having an economic purpose the investment in which will directly and indirectly return to it an income equivalent to that which would be returned by an equal investment in private property devoted to production and distribution. Two dangers are inherent in all expenditures on public works. One is that the money will be wastefully, if not dishonestly, spent, owing to governmental inefficiency and political influence. The other is that practically no effort worthy of the name ever is made to estimate the economic advantages of any government expenditure either before or after it is made. Experience within the last decade has shown that there are extremely strong reasons for carefully scrutinizing all proposed expenditures upon public works and restricting them to those as to the desirability of which there can be no serious question. The Great Lakes-St. Lawrence "seaway" is certainly not one of these.

Cab Insulation for Electric Locomotives

The economic advantage of heat-insulated cabs for electric freight and passenger locomotives has been explored recently by F. H. Brehob, transportation engineering department, General Electric Company. Making such a calculation may strike the steam locomotive operator as an odd thing to do, for although steam locomotive cabs are usually enclosed or protected for operation during cold weather, the heat for the cab is ordinarily regarded as a by-product. The electric locomotive cab, from which the locomotive is operated, is usually at the front end, it is exposed to strong head winds, and it is heated electrical-ly. If windows and doors are not tight, it can be an extremely uncomfortable place in winter.

According to Mr. Brehob's calculations, with good wall and ceiling heat insulation and well-fitted doors and windows, the reduction of electric power used for heat, as compared with an uninsulated cab will represent a saving of \$163 a year when the cost of power at the locomotive is two cents a kilowatt hour. This represents a saving of 25 per cent on the heat insulation investment. The insulation insures tolerable cab

temperatures in winter, and adds appreciably to the comfort of the crew in summer, thus combining improved operating conditions with sound economic ad-vantage.

Better Drainage

With the greater attention that has been given to roadbed drainage in recent years, case after case has been noted of roadbeds that have developed unstable conditions after years of service during which they had been presumed to have become thoroughly solidified. In a number of instances indications of a growing instability of roadbeds have been reported to have followed the introduction of heavier locomotives or an increase in traffic, but it is hard to understand how this could represent other than a contributing influence.

A more plausible explanation is that the increasing rates of settlement and epidemics of slides are the result of the progressive increase in the size of water pockets as succeeding applications of ballast have been forced down into the soils that have been softened by water entrained in the growing body of porous ma-terial. Eventually this has affected such a large portion of the embankment as to extend into the side slopes, causing them to bulge under the lateral pres-ure and giving rise to a compensating settlement in the section under the track. Any increase in the live load would obviously aggravate this condition.

Great progress has been made in the last ten or more years in reducing the expense of track and roadway maintenance through improved drainage, but in view of the phenomenon cited above and the explanation offered for it, there is reason for anticipating the need for continued programs of drainage work for many years to come.

Anonymous Communications

We have received a number of very interesting letters commenting on some of our recent editorials, signed either with real or assumed names but without addresses. These letters are so extreme and obviously unfair that we cannot publish them in our communica-tion columns. We should like very much, however, to supply the writers with actual facts to controvert some of their statements, and regret that we cannot reach them. Writers need not hesitate to use their real names and give us their addresses in instances of this sort. We will not use their names or publish the letters unless given explicit permission so to do. Such communications are regarded as confidential, so far as the writer's name is concerned.

Who Pays for the Highways?

Actual users of federal aid state highways pay only 18 or 20 per cent of construction and maintenance costs

By C. S. Duncan

Economist, Association of Railway Executives

"Motor vehicle taxes can not produce sufficient revenue to pay the total road bill."

THE above is my text. The quotation is taken from what purports to be an agreement arrived at by a joint committee representing the National Automobile Chamber of Commerce and the American Association of State Highway Officials, over which joint committee the chief of the Bureau of Public Roads is said to have presided. Let us see what this text means from an economic point of view.

Highway Transport In Default

It means that our highways, as a transportation system, on a business basis, that is, with an eye solely to revenues and expenses, have been admittedly and annually in default. It means, further, that these highways on this basis will be admittedly and annually in default for the future. That, then, is that. What is to be done about it? What do those who are interested in development of the highways and operations over them have to propose that we do about it?

Kinds of Highways

Let us begin, then, at the beginning. In tracing the source of the funds which are expended for the improvement and maintenance of our highways for the development of motor vehicle transportation, it is necessary that we have, first, a clear and mutual understanding as to what kinds of highways we are talking about. It seems to me that the classification of highways required for a study of sources of highway income is one based upon jurisdiction, responsibility and control; that unit of government which has jurisdiction over a highway and for which it is responsible, collects and expends the funds for the improvement and maintenance of that highway. On this basis, there are, in general, three kinds of highways:

- (a) State highways;
- (b) Other highways; and
- (c) City streets.

State Highways. The highway between cities under the jurisdiction of the state is called the state highway. Its mileage as a whole in each state is called the state highway system. For the year 1930 the mileage of this state highway system for the country as a whole was about 324,000 miles out of a total highway mileage outside of all incorporated cities and outside of densely populated regions in New England of about 3,009,000 miles, or between ten and eleven per cent. These are the trunk lines, paralleling inevitably the rail lines.

It is this limited highway mileage that is generally referred to by the phrase "entire state highway system." Confusion has resulted by the use of this phrase in the mind of the public, whether intentional by the users or not, for the reason that it is generally interpreted to mean every mile of highway within the state.

It should be added that of the limited state highway

system about 199,000 miles are included within the so-called federal aid system. This system has been laid out with the advice of the federal military department to serve as a basis for possible military operations. For the construction of this highway mileage the federal government is authorized to appropriate one-half of the cost of construction up to \$15,000 per mile. This is the so-called federal-aid-state-highway system. Practically all of this state highway system, including federal aid mileage, runs from one large city to another, most of which have been built up by railroad operation and, therefore, necessarily parallel the main trunk line railway systems of the country.

Other Highways. The rest of the highway mileage outside of incorporated towns and densely populated regions in New England, which is under the jurisdiction of units of government other than the state, such as the country, town, township or other local unit, has a total mileage for the country of about 2,700,000 miles. These highways are referred to usually as "county and local roads." The distinction, however, is made solely on the basis of jurisdiction and has no direct reference either to character or to use. Some are traveled more, many less than the state highways. Over them motor vehicles operate freely, if passable. They are open highways, both as to origin and delivery of traffic. This is a part of their flexible operation.

City Streets. Streets within the incorporated limits of a city are separated from other highways by reason of the fact that the municipality has jurisdiction over them. These city limits, however, are merely an artificial line in highway operation. State highways and these other highways run to and beyond the limits of the city. Thus, the city street becomes only a segment of a through route. Motor vehicle operations occur freely and without limitation for pickup and delivery service over these streets. This also is a part of their flexible operation. The mileage of these streets for the country as a whole is calculated at about 260,000 miles.

Sources of the Highway Dollar

These, then, are the highways for the construction and maintenance of which vast funds are collected by means of taxes and other imposts. What are the sources of funds for these different kinds of highways? I have had set forth a table in which are itemized the source and amount of funds for the years 1921, 1923 and 1930, and for an eight-year period, 1923 to 1930, inclusive. This table shows funds made available for the federal aid state highways. In this case the first three items include motor vehicle license fees, gasoline tax receipts, and the fees charged motorists in national parks. The percentage of their contribution to total funds available for this system of highways is also indicated and appears for 1921 at 24.5 per cent; 1923 at 32.4 per cent; for 1930 at 61 per cent, and for the eight-year period at 52.6 per cent. This is the total special contribution by motor vehicles to this limited mileage of highway.

I call attention, however, to the fact that these figures represent the contribution by all motor vehicles. It is not confined to those operating on this limited system. Motor vehicles operating within city limits, estimated at one-half of the total, have their license fees and gasoline tax receipts included here. Those motor vehicles operated over other highways, or 90 per cent of the total highway mileage, likewise have their license fees and gasoline tax receipts included here. The gasoline taxes paid by railroads in their operation of gasoline trains, section cars and in yard operations are also included here.

It will be noted from this table that these special fees and taxes, representing the total sole contribution by all motor vehicles and consumers of gasoline who pay taxes thereon, aggregate for the eight-year period, 1923 to 1930, inclusive, something over \$3,200,000,000 or 52.6 per cent.

The remaining funds made available, measuring the default, are derived from other sources, which sooner or later reach back to taxes on the taxpaying public. This is equal to about \$2,900,000,000, or 47.4 per cent of the total amount, of which federal appropriations amount to \$731,500,000, or 12 per cent.

In the table similar items and figures are set up for funds made available for other highways representing 90 per cent of the total highway mileage. In this case, special motor vehicle license fees and gasoline tax receipts equaled for the eight-year period about \$710,500,000, or 12 per cent. Funds made available from other tax sources, including railroads and measuring the default for these highways, equaled over \$5,200,000,000, or 88 per cent.

As to city streets, figures indicate about three per cent of funds available for their improvement and maintenance is derived from other sources than levies against abutting and adjacent property and general tax fund. The expenditure for these purposes for the eight-year period 1923 to 1930, inclusive, was approximately six billion six hundred million dollars,—97 per cent from property taxes, including railroad terminals, measuring the default.

The situation has been shown in the form of a graph which indicates the relative proportion of funds made available from special motor vehicle fees and gasoline taxes as contrasted with other tax sources. This graph perhaps more strikingly represents the situation outlined at the beginning, namely, that as a transportation system the highways have been admittedly and annually in default and will be admittedly and annually in default for the future.

Highway Policy

But perhaps our great highway system is not an economic proposition. It may be that it should be considered on some other basis. This observation brings us directly to the fundamental issue—What is our highway policy? Why are we improving these highways? For whose use are they being improved? What are the relative rights of the private passenger automobile and the commercial operator on these highways? This is the issue that first must be settled before the collateral inquiries as to who should pay and how much each should pay can be settled.

Well, it seems to me that we have no settled public policies as to highways. Very much like Topsy, our highways have just grown. Certainly, in the beginning, when motor vehicle traffic began to develop and formed the inspiration for a real good roads movement, improvements were not intended for the construction of great commercial highways. In considering this question, the

Chamber of Commerce of the United States in 1923 said—

Your committee frankly accepts the motor vehicle as an essential addition to the transportation agencies required in our modern economic life. It follows that improved roads to carry the motor vehicle are equally necessary. These highways are free to the general public, and are built out of general public funds, just as are schools, parks, and many other improvements essential to the public health and welfare.

Public health and welfare are one thing; commercial operations are a wholly different thing. Perhaps no one will question the statement that originally our improved roads were to meet the demand of the private passenger automobile so that there might be ready convenient and comfortable travel and communication throughout the country. Every one with an automobile hated the mud and the dust of the old roads. All rejoiced in the comfort and ease and speed made possible by a smooth and dustless surface.

The operation of a private passenger automobile is not an economic operation. In it are involved social and political questions. In the same way, "schools, parks and many other improvements essential to the public health and welfare" are not considered on an economic basis. No one believes that our schools or parks should be freely utilized by business for private gain. Thus, we have in the highway problem a general social, political and public welfare element that insinuates itself into every phase of the situation. This is one of the great and primary difficulties in the way of a clear and definite solution. There is a demand for highway improvement sustained by those who use the private passenger automobile, entirely apart and distinct from the use of that highway for a commercial operation. Certainly, this is a part of the highway policy of the states and the nation.

Additional Cost for Commercial Operation

There is, however, one element which can be clearly isolated. The improvement of our highways for the comfort and convenience of travel and communication by means of the private passenger automobile and the improvement of these great trunk highways for commercial operations by larger and heavier units and by trains is quite a different matter. Can we not say definitely and without qualification that additional expenditures for the improvement and maintenance of the highways, over and above what is required for the private passenger automobile, should be borne wholly and absolutely by commercial operations? The principle is clear. Its application is difficult. What are these additional expenditures for construction and maintenance?

What is this difference in cost? In October, 1925, the Journal of Land and Public Utility Economics published an article by the chief of the Bureau of Public Roads from which I quote as follows:

Compared with the pavement required for dense passenger car traffic only, such a pavement would have (for truck traffic) an extra thickness of about two inches of concrete—an extra cost of, say, \$10,000 a mile. Roughly, that is the measure of the additional cost of building for heavy truck traffic.

In 1932, in a statement by the Bureau of Public Roads, referring to the state of Pennsylvania, it is calculated that the thickness of the pavement required for passenger cars is five and one-half inches over all, while for a five-ton truck the required thickness is seven and seven-eighths inches over all, a difference of two and three-eighths inches in the thickness of the concrete slab. There is no consideration given herein for the greater width of these highways, which is also an important element of expense.

Clifford Older, formerly highway engineer for the

Funds Made Available for Highways and City Streets

Item	1921	1923	1930	Total 8 years 1923-30
State Highways (Federal-Aid State Highway System)—324,496 Miles				
1 Motor vehicle license fees	\$101,284,479	\$147,075,966	\$289,801,738	\$1,813,274,153
2 Gasoline tax receipts	3,273,988	15,872,884	411,109,446	1,396,616,338
3 Motorists fees in National Parks*			509,407	2,545,190
4 Sub-total	<u>104,558,467</u>	<u>162,948,850</u>	<u>701,420,591</u>	<u>3,212,435,681</u>
5 Taxes levied by State for highways	67,232,798	{ 24,348,478	11,181,693	135,737,739
6 Appropriations from State general tax funds		37,461,579	32,136,298	286,509,553
7 Miscellaneous income	8,079,391	15,498,492	17,083,821	111,067,813
8 State highway bonds and notes	111,396,637	88,186,784	222,288,308	1,031,068,868
9 Funds transferred from counties	35,344,175	. 66,753,265	60,609,297	601,862,852
10 Federal appropriations:				
11 Regular, Federal-aid	100,000,000	50,000,000	75,000,000	565,000,000
12 Emergency, flood road relief			3,654,000	8,851,294
13 Highways in National parks			5,000,000	15,000,000
14 Highways in National forests			7,500,000	44,000,000
15 Mt. Vernon Memorial Bridge			a 9,355,000	9,355,000
16 Mt. Vernon Memorial Highway			4,500,000	4,500,000
17 International Road Congress			55,000	55,000
18 By surplus war materials		58,111,836		84,826,014
19 Sub-total	<u>322,053,001</u>	<u>340,360,434</u>	<u>448,363,417</u>	<u>2,897,834,133</u>
20 Total	<u>426,611,468</u>	<u>503,309,284</u>	<u>1,149,784,008</u>	<u>6,110,269,814</u>
Other Highways—2,684,570 Miles				
21 Motor vehicle license fees	\$15,116,937	\$34,438,385	\$54,911,122	\$342,256,277
22 Gasoline tax receipts	239,472	8,419,446	107,110,709	368,365,889
23 Sub-total	<u>15,356,409</u>	<u>42,857,831</u>	<u>162,021,831</u>	<u>710,622,166</u>
24 Taxes levied for road purposes	348,513,837	361,664,535	{ 398,437,988	3,561,295,757
25 Appropriations from general tax funds			96,195,337	
26 Miscellaneous income	54,125,593	45,362,668	33,338,076	329,376,459
27 Road bonds and notes	323,176,097	125,753,573	94,684,481	1,129,211,865
28 Funds transferred from State	2,321,266	b	33,701,795	c 194,796,609
29 Sub-total	<u>728,136,793</u>	<u>532,780,776</u>	<u>656,357,677</u>	<u>5,214,680,690</u>
30 Total	<u>743,493,202</u>	<u>575,638,607</u>	<u>818,379,508</u>	<u>5,925,302,856</u>
All Highways—3,009,066 Miles				
31 Motor vehicle license fees	\$116,401,416	\$181,514,351	\$344,712,860	\$2,155,530,430
32 Gasoline tax receipts	3,513,460	24,292,330	518,220,155	1,764,982,227
33 Motorists fees in National parks			509,407	2,545,190
34 Sub-total	<u>119,914,876</u>	<u>205,806,681</u>	<u>863,442,422</u>	<u>3,923,057,847</u>
35 Taxes levied for road purposes	415,746,635	423,474,592	{ 409,619,681	3,983,543,049
36 Appropriations from general tax funds			128,331,635	
37 Miscellaneous income	62,204,984	60,861,160	50,421,897	440,444,272
38 Bonds and notes	434,572,734	213,940,357	316,972,789	2,160,280,733
39 Transferred funds d	37,665,441	66,753,265	94,311,092	c 796,659,461
40 Federal appropriations—total (items 11 to 18, incl.)	100,000,000	108,111,836	105,064,000	731,587,008
41 Sub-total	<u>1,050,189,794</u>	<u>873,141,210</u>	<u>1,104,721,094</u>	<u>8,112,514,823</u>
42 Total	<u>1,170,104,670</u>	<u>1,078,947,891</u>	<u>1,968,163,516</u>	<u>12,035,572,670</u>
City Streets—260,000 Miles				
43 Expenditures credited to use of automobiles	b	\$17,522,000	\$33,740,000	\$201,865,000
44 Expenditures credited to taxes from other sources	b	544,078,566	958,609,721	6,438,426,138
45 Total expenditures for outlays, operation and maintenance, and interest charges—all city streets	b	561,600,566	992,349,721	6,640,291,138

Percentage Proportion from Motor Vehicle Fees and Gasoline Tax

46 State highways (4 + 20)	24.5	32.4	61.0	52.6
47 Other highways (23 + 30)	2.1	7.4	19.8	12.0
48 All highways (34 + 42)	10.2	19.1	43.9	32.6
49 City streets (43 + 45) .....	...	3.1	3.4	3.0
50 All highways and city streets (34 + 43) + (42 + 45) .....	...	13.6	30.3	22.1

Percentage Proportion from All Other Sources

51 State highways (19 + 20)	75.5	67.6	39.0	47.4
52 Other highways (29 + 30)	97.9	92.6	80.2	88.0
53 All highways (41 + 42)	89.8	80.9	56.1	67.4
54 City streets (44 + 45) .....	...	96.9	96.6	97.0
55 All highways and city streets (41 + 44) + (42 + 45) .....	...	86.4	69.7	77.9

* Fees collected from motorists since adoption of special park road program. a Estimated expenditures to date—detail by years not available. b Not available. c Exclusive of 1923 and 1924—figures not available. d Includes some duplications—amount unknown.

Sources of Information:

All of the basic information shown in this table was taken from publications of the United States Governmental Departments, as follows:

United States Department of Agriculture, Bureau of Public Roads (all items except those enumerated below)

United States Department of Interior, National Park Service (Items 3 and 13)

United States Department of Agriculture, Forest Service (Item 14)

From information obtained from the Arlington Memorial Bridge Commission (Item 15)

United States Department of Commerce, Bureau of the Census (Items 43, 44 and 45)

Items 1 to 41 inclusive, are funds made available, and the figures shown are those published by the various Governmental Departments. Items 43, 44 and 45 relating to city streets represent income and expenditures and not actual appropriations, and to this extent differ from highway information. City street data include actual figures for cities having over 30,000 inhabitants as reported in the Bureau of Census publication, "Financial Statistics of Cities." In order to embrace statistics for the entire urban area an estimate was included for cities between 2,500 and 30,000 inhabitants.

Note: Mileage as of December, 1930.

state of Illinois, has calculated that the increased construction and maintenance cost of the highways in Illinois for heavy truck traffic was \$9,000 per mile.

These heavier vehicles constitute about one and one-half to two per cent of the total number of vehicles using the highways. For example, the governor of the state of Virginia has announced a cost of \$10,000,000 for reconstructing bridges in that state to accommodate only two per cent of the vehicles.

All this is to say that while there is definite evidence of a substantial increase in cost, there is no information available as to precisely what this would mean for

the country as a whole or as applied to the greatly varying conditions within each state. These are facts which we need to know in determining the relative burden which each highway operation should bear. These are costs that should be met by such vehicles, over and above a fair share of other costs.

Proposed Tax Principles

We come, then, to a brief consideration of what is being proposed for our highway policy and what principles are suggested for determining a fair allocation of these tremendous costs.

Entire Bar Equals 100% Basic information from United States Government Reports

State Highways - 324,490 Miles

	\$104,558,467	\$322,053,001
1921	24.5	75.5
1923	32.4	67.6
1930	61.0	39.0
8 Years 1923-30	52.6	47.4

Other Highways - 2,684,570 Miles

	\$15,356,409	\$728,136,793
1921	2.1	97.9
1923	7.4	92.6
1930	19.8	80.2
8 Years 1923-30	12.0	88.0

All Highways - 3,009,066 Miles

	\$119,914,876	\$1,050,189,794
1921	10.2	89.8
1923	19.1	80.9
1930	43.9	56.1
8 Years 1923-30	32.0	67.4

City Streets - 260,000 Miles

	\$17,522,000	\$544,078,566
1923	3.1	96.9
1930	3.4	96.6
8 Years 1923-30	3.0	97.0

All Highways and City Streets - 3,269,066 Miles

	\$223,328,681	\$1,417,219,776
1923	13.6	86.4
1930	30.3	69.7
8 Years 1923-30	22.1	77.9

■ Proportion from Motor Vehicle Fees and Gasoline Taxes

▨ Proportion from all other sources

Note: Mileage as of December 1930

There has emanated recently from motor vehicle interests a statement of what are called "sound and equitable principles to control special taxation for motor vehicles." There are many interesting factors to this set of tax principles, including:

(a) That the states should be the sole special taxing agency;

(b) That no highway should be improved by expenditure of public funds in excess of its earning capacity; and

(c) That all moneys raised by such special taxes should be controlled and expended by the state motor vehicle department.

It would be most interesting indeed to learn how the earning capacity of a highway could be calculated.

As to the relative burden of the cost of building and maintaining these highways, this set of tax principles declare the following to be the chief factors for consideration:

(a) Benefits to society in general. This follows out the early theory that highways are like schools and parks, for general public health and welfare.

(b) Benefits to definite groups, such as agriculture, manufacture, labor, railroads, mining, forestry and waterways. It seems to me odd that railroads should be included here, for I am unable to determine the benefits to them derived from the up-building of competitors.

(c) Benefits to property served. I am again curious to know what equitable principle there is in asking property served to pay for the construction and maintenance of a highway used in commerce. It would seem that all expenses of operation should be paid by one who operates commercially over the highway. I do not understand that as to railroads there has been a contribution from taxes levied upon property benefited by such transportation service.

(d) Benefits to the road user. Well, the road user is then only one out of four factors.

After this preliminary outline, we come to the real essence of the tax principles. In substance, this is that all special motor vehicle taxes should be levied and used only and solely for the improvement and maintenance of highways "used by the general public." This means, in other words, the federal-aid-state-highway system, making up only 10 to 11 per cent of the entire highway mileage in the country, or 324,000 out of 3,009,000 miles.

There is another limitation, however, upon this responsibility. These special motor vehicle taxes should first be used merely for the maintenance of this limited highway system. If by chance any funds are left over from maintenance expenses, then they may go for construction and administration costs "until a substantial amount of construction costs are thus paid." After that, again, if any funds are left, they are to be used to defray all or a part of the costs of bond issues for highway purposes.

What, then, as to these other highways and these city streets? Here is what is proposed. These roads are to be improved from local revenues obtained from local general taxes, with special assessments on adjoining land.

Farmers Should Be Interested in Bureau of Roads' Ideas About Farm Taxes

It should be of interest to the farmers of the country to know that this principle of allocating the burden for development of better highways outside of the limited state highway system, the farm to market road, the so-called feeders to the railroads, has for years been consistently preached by that branch of the Department

of Agriculture known as the Bureau of Public Roads. In the Agricultural Yearbook for 1924 there appeared an extended discussion of highways and highway transportation by this Bureau. From it I quote the following, pages 159-160:

In this analysis there would seem to be the basis for a fair distribution of the burden of highway expense, as follows:

The county and local roads, being primarily of benefit to the land they serve, should be constructed and maintained with funds raised by county and local property taxes in the same manner that city streets are constructed and maintained by city property taxes. The main state and interstate roads, rendering general benefits to the whole state and to the whole nation, and special benefits to the wide ranging traffic that uses them, should be constructed and maintained in part by Federal-appropriations in fair proportion to the general Federal benefits, in part by state property taxes levied in proportion to the general state benefits, and in part by special taxes levied upon vehicles in proportion to the special benefits derived by the traffic.

In 1932 this same Bureau of Public Roads is distributing throughout the country a series of photographs, eighteen in number, the last of which contains the following statement:

But, how are the lesser roads to be built if all the motor vehicle's contribution is devoted to the main state highways? The answer is: By means of taxes upon land. * * * The heavier vehicles scarcely use them at all. Each such road is mainly used by those who live along it and by their visitors and servitors. These are the roads that lead to and feed the railroads as well as the main highway. They are traveled at the beginning and end of every journey, whether the long stage be by rail or highway; but their principal service is to land to which they give access.

So it is entirely reasonable and fair to tax motor vehicles for the support of the main state highways and land for the total support of the local highways.

Roads Bureau's Tax Policy Same as That of Motor Vehicle Interests

I merely raise the following points in connection with this entire set of tax principles agreed upon by motor vehicle interests and propagated not only by them, but also by the Bureau of Public Roads in the Department of Agriculture.

(a) The main state highways constitute but ten or eleven per cent of the entire highway mileage of the country and the "lesser roads" constitute 89 or 90 per cent of the total highway mileage.

(b) All the motor vehicles' contribution is to be devoted to this ten per cent of the highways, wherever the operation may be, and including one-half of the total motor vehicle operation which takes place within city limits where more than half the gasoline is consumed, all operations on the 90 per cent comprised in other highways, and such gasoline taxes as are paid by other consumers, including the railroads. Can it be said, then, that the operations over this limited highway pay their own way?

(c) The 90 per cent of the highways outside the state highway system are to be built and maintained "by means of taxes upon land," pressing most heavily, of course, upon farm land, but including the railroad right of way. It is obviously not intended that the users of these highways pay their own way.

(d) No mention is made of the city streets, constituting 260,000 miles, but obviously their construction and maintenance must be from taxes, since all the motor vehicles' contribution is to be devoted to the main state highways.

(e) If commercial operations are to be confined to the limits of the main state highway, what, then, becomes of the flexible operation of motor trucks that is constantly held up as one of its chief advantages? As

a matter of fact, these commercial operations are everywhere,—in all city streets for pick-up and store-door delivery,—on all highways where traffic calls.

(f) What contribution are these motor vehicles to make for the upkeep of government, for schools, courts, supervision and policing of the highways themselves, if all their contribution is applied to the construction and maintenance of this limited system?

(g) These so-called lesser roads, they say, lead to and feed the main highway and thereby justify the contribution by operations over them to the main highway system. They likewise lead to and feed the railroads. It would seem logical, according to this reasoning, that if motor vehicle operations on these so-called lesser roads are to be made to contribute their total registration fees and gasoline taxes to the main state highways because they feed into those highways, then, by the same token, since these lesser roads feed likewise, according to the statement, into the railroads, a similar contribution should be made by them to the railroads. But as to railroads the flow of funds is in the opposite direction. Why should it not be so for operations on the state highways?

While this may ultimately be the principle of taxation that the public will adopt,—and the public will finally determine it—with its fairness I can not possibly agree. Highway improvement for the private passenger automobile on a non-economic basis is one question. Commercial operations on these highways present an entirely different issue. This is an economic matter. To the extent that an owner and operator of a commercial motor vehicle, who does not use a given highway, that is, operates within city limits or on other highways, is compelled to contribute any amount whatsoever to the construction, improvement or maintenance of that highway, by that much the commercial operations over such highway escape a legitimate operating expense. To that extent, also, competition with other means of transportation that are a wholly private enterprise is unfair. To that extent, equity is taken from the private enterprise through a governmental agency.

What all this comes down to finally is that, as a business proposition, transportation over the highways in the period 1923-1930, inclusive—

- (a) Has failed to pay the construction and maintenance cost of its roadway
 - As to state highways by \$2,900,000,000
 - As to other highways by 5,200,000,000
 - As to city streets by 6,400,000,000

—Or a total of about \$14,500,000,000

- (b) Has not been required to pay a dollar of taxes on this vast property devoted to its use.

- (c) Has thus been relieved of most substantial operating expenses by this public subsidy.

The federal-aid-state-system—10 per cent of total—has been aided by contributions—

- from those operating within city limits, equal to about one-half of total special motor vehicle taxes, or about \$2,000,000,000.
- by those operating on other highways—90 per cent of total highway mileage—representing a substantial amount.
- by other consumers of gasoline, such as railroads, motor boats and other gasoline users.

The actual users of these federal-aid-state highways, paralleling and competitive with the railroads, pay, therefore, only 18 or 20 per cent of construction and maintenance costs, and no taxes on their roadway. This is manifestly unfair competition.

Excise Taxes

I desire to touch very briefly upon another point. It is federal aid. The chief of the Bureau of Public Roads

has on several occasions called attention to the amount of excise taxes paid by motor vehicles as off-setting and more than off-setting the contributions made by the federal government in highway aid. The figures show that federal excise taxes levied on account of the World War for the period 1917 to 1931, inclusive, aggregated over \$6,615,000,000. Of this amount the automobile industry contributed something over \$1,143,000,000. It is obvious that by far the larger proportion of these excise taxes was paid by the private passenger automobile because their number far exceeded the total of all other vehicles. But other agencies of transportation and communication likewise paid federal excise taxes. During this same period they contributed over \$1,167,000,000. The railroads themselves paid over \$955,500,000. Now, in this same period federal appropriations and gifts to public roads aggregated over \$1,452,000,000. To date, therefore, all excise taxes imposed upon the motor vehicle industry have been more than repaid by over \$309,800,000. If this off-set is to be made, it will mean that the motor industry has contributed nothing to the war debt, while other industries, including the railroads, have made most substantial contributions. I do not believe that the motor industry itself will desire to assume this position.

Highway Bonds

I must say a word about highway bonds. The chief of the Bureau of Public Roads has himself frequently stated in public and has more frequently been quoted to the effect that no state has issued highway bonds since 1925, except those predicated upon special motor vehicle taxes. He is authority for the statement that there are twenty-one states which do not levy general property taxes for state road purposes. Remember, these are state roads and do not include the other highways representing about 90 per cent of total highway mileage. It seems to me quite unfair to state that highway bonds are predicated upon special motor vehicle taxes when every dollar of such funds has been accounted for in the figures showing the motor vehicle's contribution. A dollar can not be paid twice. If all special taxes are credited against expenditures on the highway, exclusive of bonds, then it can not be said that these bonds are predicated upon special motor vehicle fees.

Government Versus Private Property

There is another consideration involved in this matter. Highways and city streets are government property. As such they can not be taxed and, therefore, are not a source of government revenue. The funds invested therein bear no interest payable to the government owner. Now, when these highways are used for commercial purposes in competition with a private enterprise that does bear a property tax throughout, that is required to pay interest on its entire investment and does contribute liberally to the tax fund out of which expenditures are made for the highways, there results an element of unfairness in competition between the two. Commercial operations over such a highway escape a substantial operating expense that the competitors over a private right-of-way must pay. And further, step by step, as we transfer through taxes private property to public property, the basis of taxation is narrowed and rates must rise.

The inequitable situation exists throughout the entire country. I doubt if there is a single state in the Union that does not contain local units whose solvency depends directly upon the taxes paid by the railroads. I venture the assertion, also, that in most, if not all, of these local units, there is a burden of debt for the construction of

improved highways and a drain upon the treasury for their maintenance. Can such an inequitable situation be imbedded in our highway policy?

Relative Tax Burden

The burden of taxes upon the railroads for the upkeep of government is well known to be heavy, in fact, of staggering proportions. Can any one find a corresponding contribution that is made by their competitors on the highway? These competitors object most strenuously to having any diversion of their special taxes to other purposes than highway expenditure. There are states where these special taxes are in lieu of all other taxes, so that there is no contribution whatsoever by such highway operators.

I return, then, to the starting point:

"Motor vehicle taxes can not produce a sufficient revenue to pay the total tax bill."

Thus, as a transportation system, the highways have been admittedly and annually in default and will be admittedly and annually in default for the future if the present conditions continue. What is to be our highway policy? Starting the improvement program out of general public funds, "just as are schools, parks and many other improvements essential to the public health and welfare," are we not drifting into an entirely different situation? Not until the present year have I seen courage enough on the part of those who advocate unlimited improvements of these highways on the present basis, to state the policy at which they aim. I quote from an article by the chief of the Bureau of Public Roads, which appeared in the April, 1932, issue of the *Scientific American*:

We are not investing the large sums we are pouring into this newest of the great works of internal improvement simply to provide pleasure roads for motorists. The purpose is much more serious than that, as I have tried to indicate. It is commerce as well as personal travel that we are providing for—a kind of commerce, an intensity of commerce that will not be possible unless we have these roads. It is absolutely necessary that we build for trucks as well as for automobiles.

Is it, then, to be the policy of this country that these highways are to become progressively and without definite limit great avenues of commerce? If so, commercial operations on the highways should in equity pay all the costs involved. As the figures have shown, without taking into account the more than six billions of dollars expended upon city streets, which furnish untaxed and relatively free terminal facilities for highway transportation, there has been during the past eight years a default of \$8,100,000,000 in full payment of funds made available for the improvement and maintenance of these highways.

In view of the facts that have been presented, it seems obvious to me that no one can claim either that these commercial operations by bus and truck have fully paid or that they are paying now.

THE SPECIAL FARES established by the Southern Pacific some years ago for travel in coaches and tourist sleeping cars between Portland, Ore., and San Francisco, Cal., and Los Angeles, have been reduced to \$20 for the round trip from Portland to San Francisco and \$30 for the round trip from Portland to Los Angeles. This is a reduction of \$8 in the San Francisco round trip and \$15 in the Los Angeles fare. The fares also apply from other western Oregon main line points. The low-fare tickets are on sale daily until October 15 and are good for travel in coaches or reclining chair cars. They are also good in tourist sleeping cars upon payment of the regular Pullman charges. The return limit is 16 days.

Six-Hour Day Study Takes on New Aspect

WASHINGTON, D. C.

CONSIDERATION of the effect of the application of the six-hour day to railway service which is being investigated by the Interstate Commerce Commission at the request of Congress, seems likely to take on a new aspect, more directly related to the problem of increasing employment than it has been heretofore, as the result of the decision of the Interstate Commerce Commission to inquire into the cost of putting the six-hour day into effect on the basis of six hours pay for six hours work. Heretofore, because of the position taken by the railway labor organizations that asked Congress to pass the resolution for the investigation, the question has been mainly discussed on the basis of eight hours pay for six hours work, and the railroads, in their studies which were presented at the hearings in connection with the commission's investigation in May, also based their estimates of the increased cost on that assumption. The total of their estimates was that adoption of a six-hour day on the basis of the amounts now paid for eight hours would increase the payrolls of the Class I carriers by approximately 25 per cent, which for the year 1930 would have been over \$600,000,000.

At the conclusion of the hearings in June two alternative suggestions for making a further ascertainment of the effect of the adoption of a six-hour day were made by Commissioners McManamy and Eastman, which were later made the subject of conferences with representatives of the roads and of the employees. Commissioner McManamy's scheme was to put the six-hour day actually into effect on a typical road or roads, while Commissioner Eastman proposed field studies on typical operating divisions on various bases.

Now the commission has advised the representatives of the various groups that it has dropped the idea of making an actual test or field studies and instead it has issued an order to the roads to supplement the studies which they filed as exhibits at the hearings by supplying with each additional columns showing the effect of a six-hour day on the number of men to be employed and on the payroll on the basis of six-eighths of a day's pay for six hours work. This would eliminate a large part of the increase in cost estimated by the roads on the other basis as it would involve no increase in hourly rates. There would even be an offsetting factor in many instances if six hours' pay were paid for six hours' work, because many train and engine employees now receive eight hours' pay for five, six, or seven hours' work.

When the plan for a six-hour day was first agitated by the railway labor organizations, although they referred to it as a plan for spreading employment, they also coupled with it the assumption that there should be no reduction in the total earnings per man, but that was before the necessity for a general wage reduction had become so plainly apparent as it has during the past year. More recently the idea of shortening total hours of work either by a six-hour day or by a five-day week for the sole purpose of spreading the available employment among as many men as possible and without any thought of increasing wages has been spreading rapidly. It has been put into effect in many industries, it has been advocated by the American Federation of Labor, and it has been the subject of several White House conferences.

Erie Completes Large Track Elevation Project Through Paterson, N. J.

Has separated grades at 20 important streets through the center of the city during the last seven years

WITHIN the last seven years, all but one of the grade crossings on the main line of the Erie in Paterson, N. J., have been eliminated through track or street elevation in a project which was completed late last fall. Extending for a distance of approximately 2½ miles directly through the center of a city of about 145,000 population, the grades were separated at 15 existing crossings through the construction of 1 highway bridge and 10 railway bridges, while at 3 other streets existing street subways were reconstructed. Two other streets were closed in consideration of the opening of three new streets across the right-of-way and the provision of a pedestrian subway at one of the streets closed. In addition to the actual track elevation work, considerable other work was undertaken at Paterson, including the construction of a new four-track stub-end passenger terminal, with spacious express-handling facilities on the street level beneath; new main-line passenger platform facilities at the Market Street station, the main station in Paterson; a new passenger station at River street; and a new coach yard and engine terminal facilities at the south end of the city to facilitate the handling of trains.

Since the road had until 1932 to finish its work at Paterson under agreements with the Public Utility Commission and the city, no attempt was made to rush it to completion, but it was spread over a period calculated to result in the least inconvenience to the public and the greatest economy to the railroad. Throughout the seven years which elapsed since the work was started in the spring of 1924, progress was almost continuous, a number of grade crossings being eliminated each year.

While essentially a filling project incident to elevating the tracks, the work had many interesting phases, owing particularly to the narrowness of the right-of-way at points, the necessity for maintaining unbroken track for the operation of approximately 150 scheduled and unscheduled trains through the territory daily, and the variety of bridge construction necessary at the street crossings and at the passenger station. Although train speeds were reduced somewhat at times throughout sections of the work, they were only slightly below the restricted speed permissible over the grade crossings which existed prior to the work, and in no case were they sufficient to delay trains more than a few minutes. Furthermore, minimum interference was caused to street traffic, as alternate crossings were kept open throughout the work.



Looking North From Hamilton Avenue Over the Section of Highest Fill

The double-track main line of the Erie passes through Paterson in a general north and south direction with west-bound traffic moving northward and, prior to the present work, crossed all streets at grade with the exception of Fulton, Governor and Essex streets, which passed under the tracks in subways. In the track elevation work, Franklin and Cedar streets were closed while all of the other streets at grade were

crossed overhead by railroad bridges or viaducts, except Fifth avenue, which was allowed to remain at grade, and Madison avenue, which was carried over the railroad. In addition, a new pedestrian subway and three new streets, Bond and Montgomery streets and Crosby Place, were carried across the right-of-way.

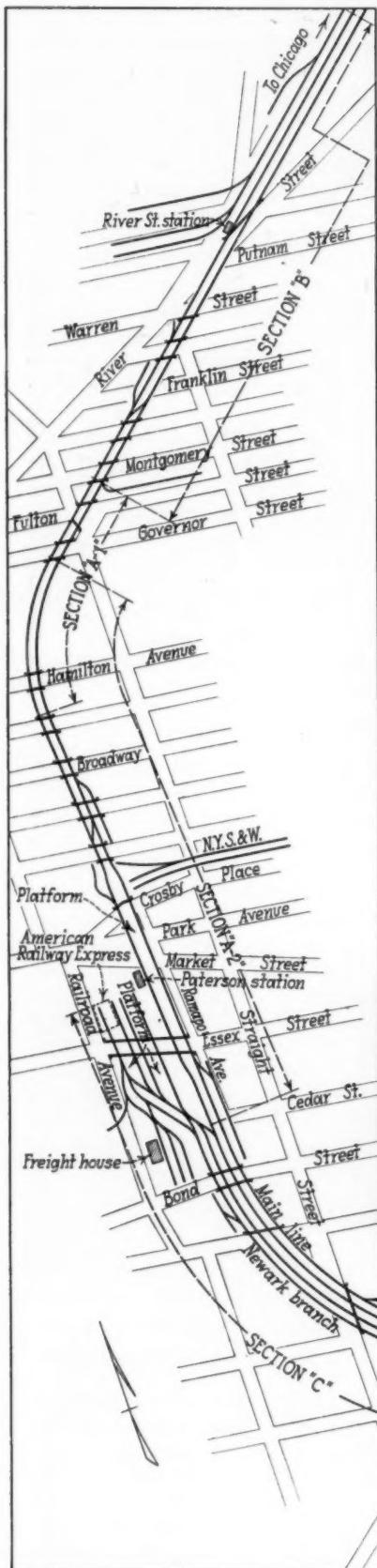
Between approach grades of about 0.9 per cent at each end of the project, the level of the elevated tracks parallels closely the grade of the old low-level tracks, crossing the different streets from 15 ft. to 20 ft. above the top of the pavement. To secure a more favorable grade than would have been possible otherwise, and to minimize the amount of filling necessary, many of the streets were lowered two to six feet under the tracks. Throughout the project, a minimum overhead clearance of 13 ft. was provided for street traffic.

The work at Paterson was divided into five sections as indicated by letters on the map and which were undertaken in the order of C, B, A1, D, and A2, each section being either completed or well under way before the next was undertaken. The first section, which was started in May, 1924, and completed in February, 1927, was Section C. This section of the work included the construction of the four-track stub-end passenger terminal just south of the Market Street station. Section B was started while work was still under way on Section C, and completed in December, 1927. The work on Section A1 was done between March, 1927, and July, 1928. Section D was started in June, 1929, and was completed in June, 1930, overlapping the work on Section A2, the last section, and possibly the largest and most interesting, which was started in April, 1930, and completed on October 1, 1931.

Much Accomplished in First Three Sections

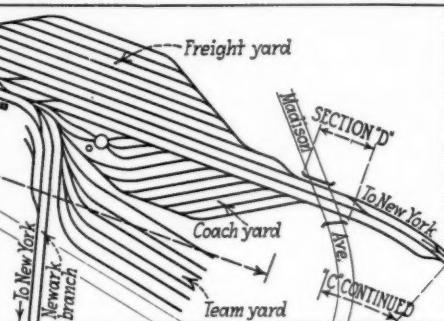
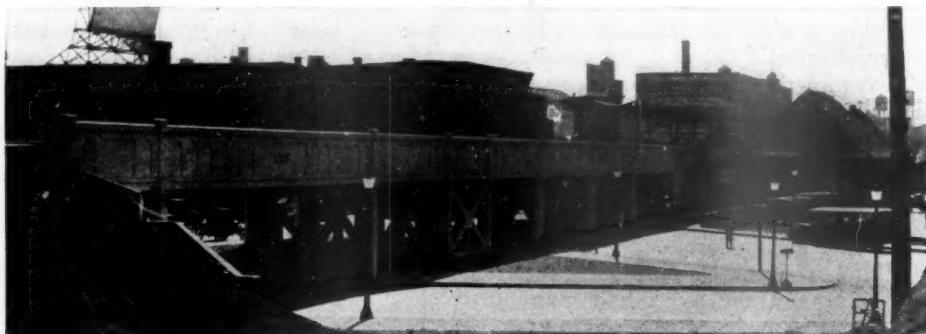
In carrying out the work on the first three sections, C, B, and A1, the track centers were spread or the track alignment was changed, where possible, sufficiently to permit the construction of the fill for one or more tracks; retaining walls were constructed where required on the side to be raised first; the abutments were built for one-half of each of the street bridges

Right — Concrete Encasement Gives a Pleasing Appearance to the Girder Bridge Over Broadway



on the half of the right-of-way taken out of service, and filling operations, using four-yard trucks, were carried out. Throughout the work on these sections, the westbound track was raised first and little difficulty was encountered since it was generally possible to spread the track centers sufficiently to prevent the encroachment of the new fill for the westbound track on to the eastbound track maintained in service. Where such encroachment would have occurred, tie cribbing was resorted to, but in no case was the cribbing higher than about eight feet.

The most extensive work in the first three sections was in connection with Section C, which involved not only the raising of the main-line tracks, but the construction of the four-track, stub-end, high-level passenger terminal, and the four-tracking of the road southward from the new terminal for a distance of about 2,500 ft. to the junction with the Newark branch, two tracks for main line use and two tracks for Newark branch service. This latter part of the improvement, in conjunction with the construction of a nine-track coach yard with capacity for 90 coaches, additional tracks for holding 10 locomotives and 54 freight cars, an 80-ft. electrically-operated turntable and a 50,000-gal. steel water tank, all grouped together just south of the junction with the Newark branch, completely relieves the main line of Newark Branch trains. Furthermore, the construction of the yard tracks and turntable near the junction provides a convenient point for the turning and tying up of terminating trains, and does away with the necessity of carrying out these operations at the engine terminal at Waldwick, N. J., about seven miles north of Paterson, which was necessary formerly, with the frequent use of the main line and the loss of time and mileage which this involved. Other improvements in connection with the new terminal include the provision of



Above — The Attractive Bridge Structure Crossing Crosby Place, Park Avenue and Market Street and Extending Southward Past the Paterson Station. On the Left — Sketch Plan of the Street and Track Layout in Paterson, N. J., Throughout the Limits of the Erie's Track Elevation Work

an electrically-operated interlocking plant and a new reinforced concrete signal tower at the junction with the Newark branch, and the construction of a six-track team yard, with concrete driveways, to accommodate 94 cars, directly alongside the new engine terminal facilities.

Modern Facilities at Terminal

The new passenger terminal is located on the west side of the main tracks and extends southward across Essex street for about 1,200 ft. from a point directly at the south end of the Market Street station. This terminal, which was constructed at a level about 17 ft. above the grade of Railroad avenue, which flanks it on the west, has four tracks, served by three platforms. The platforms, one of which is approximately 1,000 ft. long, are of the low type, of concrete construction, and the sheds are of the butterfly type with steel frames and board roofs which are protected with built-up roofing.

From its stub end south to the Essex Street subway, a distance of about 450 ft., the terminal is carried on a reinforced concrete structure, the lower level of which is inclosed and used to house the Paterson facilities of the Railway Express Agency. The provision of this express handling area involved no difficulties except in connection with the construction of its foundation, which penetrated quicksand close to the surface of the ground. In order to secure a stable foundation, 52 concrete shafts, 5 ft. in diameter, were put down in three rows through the quicksand to rock, which lies about 30 ft. beneath the surface. Excavation for the shafts, or footings, was all done in the open, using steel sheeting to retain the material penetrated.

In addition to the track elevation work involved in Section B, at the north end of the project, a new high-level passenger station was constructed at River street to replace an old station formerly at street grade. The new station facilities are divided into two parts by the two main tracks, one part, including a stucco-faced station building about 40 ft. by 15 ft., and an 800-ft. asphalt platform, serving the eastbound main, and the other part, which consists essentially of a long platform of similar construction, serving the westbound main. Both platforms are connected to the street level at River street by stairways.

Section A1 of the project carried the track elevation approximately 1,500 ft. further south and provided for the new overhead track crossings of Fulton and Governor streets. The work on this section, where the new track level is approximately 13 ft. above the old track level, required the construction of new bridges at both streets and retaining walls practically continuous along the east side of the right-of-way. The work was carried out in much the same manner as in the earlier sections.

Narrow Right-of-Way Presented Difficulties

The work on Section A2 involved the raising of the tracks on a fill as far south as Crosby place, with bridges over the five streets crossed, and the construction of a continuous structure of girder and reinforced concrete construction, approximately 550 ft. long, across Crosby place, the intersection of Park avenue and Market street, and then southward in front of the Market Street station. For four blocks south of Hamilton avenue, continuous high retaining walls were required between bridge abutments on the west side of the right-of-way and their construction, at many points, required the underpinning of existing buildings directly along the right-of-way line. Throughout this territory,

even where the adjoining property was vacant, the foundations for the walls were carried down at least eight feet below the ground level so that they would not interfere with building construction on the adjacent property at some later date.

Because of the narrowness of the right-of-way for several blocks south of Broadway (only 35 to 40 ft. wide), it was impossible to construct a fill on the west side of the right-of-way without interfering with train movements on the east side. Here, therefore following the construction of the retaining walls and the west halves of the bridge abutments, a single-track timber trestle was constructed along the west side of



Looking Over a Section of the New Paterson Terminal From the New Elevated Main-Line Passenger Platform

the right-of-way between the abutments at the different streets, to connect up the new bridges and permit high-level train operation while the fill was being made on the east side. This trestle was constructed directly over the back of the retaining wall, the footing of which extended from about 10 ft. to 20 ft. in front of the right-of-way line, the sills of the bents resting in notches provided in the back of the wall. From the south side of Market street, the trestle was continued southward along the west side of the right-of-way to a point just south of the Market Street station. From this point the new high-level track was swung to the west on a temporary alignment and was carried on a fill to a temporary connection with the most easterly of the four stub tracks provided at the new terminal. When traffic in both directions was shifted to the trestle, this completely freed the east half of the right-of-way for elevation work south to Crosby place, and practically the entire main line right-of-way from the passenger station south across Essex street.

Following the construction of such retaining walls as were necessary along the east side of the right-of-way, mostly south of the viaduct structure in front of the station, and the completion or practical completion of the east halves of the street bridges, the east half of the fill was brought up to the new grade. The filling material used in this section, as well as that used throughout most of the other sections, was obtained entirely from foundation excavations and in grading for a future expansion of the yard and engine facilities in South Paterson.

Upon the completion of the newly elevated westbound main track throughout Section A2, all traffic was diverted to this track and then, in so far as the public was concerned, all grade crossings within the city were eliminated. The remaining work consisted essentially

of filling in that part of the temporary trestle on the west side of the right-of-way north of Crosby place, the dismantling of that part of the trestle south of Market street, and the replacing of it with the west half of the viaduct structure throughout the station



The Long Skew Girder Structure Over Straight Street is Thoroughly Practical and Fully in Keeping With Its Environs

area. All of the filling of the temporary trestle was done with trucks after the ties, stringers and caps had been removed.

Twelve Bridges Were Constructed

In the entire work at Paterson, 8 two- or three-track, 2 four-track and 1 six-track railroad bridges and 1 highway bridge were constructed, which, together, involved the use of more than 5,600 tons of structural steel. The railroad bridges, all of which are steel girder structures, range from lengths of 55 ft. across several of the narrowest streets, to a length of approximately 480 ft., in the case of the bridge over River, Putnam and Warren streets and the intervening space between them, and approximately 570 ft. for the viaduct crossing Crosby place, Park avenue and Market street. The longest individual girders used were 97 ft.

Both through and deck spans were built, the choice depending largely upon the allowable floor thickness. In the case of the narrower streets, 50 or 55 ft. wide, single spans were used, while in the case of the wider single-street crossings, three-span structures were built, with steel bents at the curb lines. All of the bridges have ballasted waterproofed floors.

To improve the appearance of the bridges over Broadway and Crosby place, Park avenue and Market street, and to make them harmonize more closely with their surroundings, the outside girders and also the bents of these bridges were encased in concrete, which was given a panel effect.

The viaduct structure extending from the south side of Market street past the Market Street station, which was designed to open up and daylight the valuable area beneath the tracks in the vicinity of the station and to improve the appearance of the elevated tracks in this territory, is of structural steel construction, with three lines of columns, and is entirely encased in concrete. This structure carries two tracks with a 16-ft. concrete island platform between them. The platform, which extends from the north side of Crosby place to a point beyond the bridge crossing Essex street, about 1,200 ft., is provided with a steel frame shed covering of the butterfly type for practically its entire length, and with four stairways to the ground level. One of the stairways leads to Market street and another to Essex street, while the two others lead down to a point near the south end of the passenger station. The passenger station, a brick structure on the ground level, was not altered materially in connection with the track elevation work,

but ultimate plans for improvements at Paterson call for a station building in harmony with improvements already made.

The only highway bridge built in the Paterson project was constructed to carry Madison avenue, an important county road in South Paterson, over the main line tracks and the leads to a number of yard tracks. Here, the elevation of the tracks was not changed and the crossing was made by a two-span through girder highway bridge with a total length between abutments, at the center line, of about 125 ft. The deck of the bridge, which provides two roadways, each 27 ft. wide, with sidewalks on each side, is constructed of steel beams supporting a reinforced concrete slab. The roadway surface is paved with asphalt between bluestone curbs. The approaches to the bridge are earth embankments, paved with asphalt, that on the east side being on a 6.5 per cent grade, while that on the west side is on a 4 per cent grade.

Materials and Organization

In addition to approximately 5,600 tons of structural steel used in the bridge work and 290 tons in station canopies, the entire project at Paterson involved approximately 295,000 cu. yd. of grading, the laying or relaying of approximately 16 miles of tracks, the placing of approximately 64,700 cu. yd. of plain and reinforced concrete and the use of about 1,950,000 ft. b.m. of timber. All of the concrete used in the later sections of the work was prepared in accordance with the water-cement ratio, 2,000-lb. concrete being used in all foundations, footings and mass sections in retaining walls and abutments, while 2,500-lb. concrete was used in all bridge seats, floor slabs, column and girder encasements and railings.

All of the work at Paterson was planned and carried out by the Erie's own engineering organization, under the direction of R. C. Falconer, assistant vice-president in charge of engineering, who, as assistant vice-president and chief engineer, carried the work forward until June, 1929, when he was appointed to his present position and general direction over the work was assumed by Geo. S. Fanning, now chief engineer. The structural plans and specifications for the entire project were prepared, and all structural steelwork was erected with the company's forces under the direction of F. A. Howard, engineer of structures, and A. M. Knowles, assistant engineer of structures. General construction was under the direction of C. H. Splitstone, superintendent of construction, represented on the job, since June, 1929, by E. F. Mattocks, resident engineer, who succeeded O. V. Derr, now valuation engineer.

The City of Paterson was represented in all matters pertaining to the construction work by H. J. Harder, city engineer, and the general contractors on the work were as follows: On the first three sections, C, B, and A1—Parker & Graham, Inc., New York; section D, the Madison avenue elimination—Brooks Bros., Inc., Paterson; and section A2—Foley Bros., Inc., New York.

TANK LOCOMOTIVES OF THE UNUSUAL 2-2-2 TYPE, recently delivered by Henschel & Sohn A.-G., Kassel, Germany, to the Latvian State Railways for use with light passenger trains on fairly level track, are described in a recent issue of the Railway Gazette (London). Aside from the use of a single pair of driving wheels, a feature long since abandoned in modern railway practice, the new Latvian locomotives are noteworthy because of the inclusion of an improved "axle load increasing" device, whereby the weight on driving wheels may be increased as required.

Long Island Has Double-Tier Coach in Trial Suburban Service

Seats for 120 passengers arranged in upper and lower levels along both sides of the car—Aluminum used in construction

A N innovation in suburban passenger-car design was made by the Long Island this week when it placed in trial commutation service a coach, the seats of which are located in a staggered arrangement on upper and lower levels along both sides of the car. If this type of coach meets with the approval of the patrons of the Long Island, others of similar construction will be built to replace suburban coaches now in service which have a seating capacity for 76 passengers. The new double-tier coach seats 120 passengers.

Aluminum was used extensively in the body construction of the double-tier coach which is designed for trailer service on the electrified portion of the railroad. The total weight of the car is approximately 72,000 lb., or about 600 lb. per passenger. Compared with the trailer cars now in service, this is a reduction in total weight of approximately 3,000 lb. The present suburban trailer equipment averages 990 lb. per passenger. Thus, the new design of suburban car will achieve a saving in weight per passenger of nearly 400 lb.

Double-Tier Seats to Solve Traffic Problem

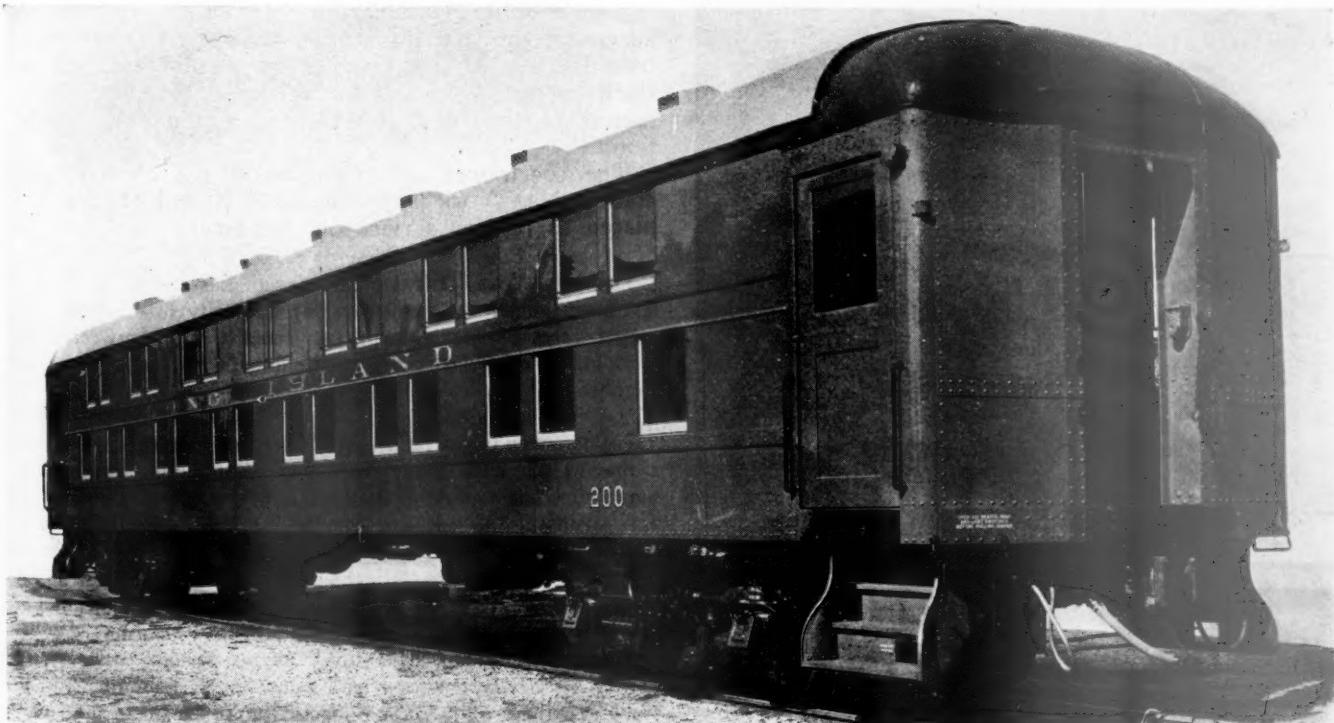
Owing to the close clearances on the Long Island, it was considered impracticable to develop a suburban car of the "double-deck" design such as that employed in highway-motor buses in this country and also used

by a number of railroads in Europe for suburban coaches. However, the problem of handling the large commutation business in and out of the Pennsylvania station in New York City to various points on Long Island was rapidly becoming more serious, especially with the limited passenger-carrying capacity of the present type of equipment. The seating capacity of the coaches and motor trailers on the Long Island range from 70 to 86, while the length of the cars varies from 60 to 64 ft. Some of the motor cars recently built are 54 ft. long.

The electrified zone of the Long Island extends as far east as Babylon, L. I., north to Port Washington on Long Island Sound, and south to Rockaway Park on Lower New York Bay. Suburban trains are composed entirely of multiple-unit cars, both motor cars and trailers being used.

The suburban train schedules require 895 trains on week days. The number of cars varies from 3 to 11 per train, the average being 10 cars. A total of 110,283,437 passengers were carried during 1931. The number of passengers carried one mile during last year amounted to 1,773,804,809, while the average miles each passenger was carried was 16.1. The average number of passenger-miles per car-mile for 1931 was 34.1.

Ten-car trains of the double-tier type, which provide an additional seating capacity of over 40 per



Long Island Double-Tier Suburban Coach—Air to Induce Exhaust Ventilation From the Interior of the Car Enters the Opening Shown at the End of the Roof Hood



Looking Down the Aisle of the Long Island Double-Tier Suburban Coach

cent, should obviate the necessity of lengthening many of the station platforms on the Long Island, permit more economical operation with respect to hauling less dead weight per passenger, and also provide more satisfactory service to the commuting patrons of the railroad from the standpoint of seating facilities.

Ample Head Room

The new double-tier coach was built in the Altoona, Pa., shops of the Pennsylvania to designs patented by Albert E. Hutt, Pelham, N. Y. A description of Mr. Hutt's design was published in the September 8, 1928, issue of the *Railway Age*, page 448. The seats are so arranged and disposed that the seats on either level



Ample Head Room for Passengers Occupying the Upper Tier of Seats Is Provided

can be reached from the center aisle. The passengers step down one step from the aisle to the lower seats and step up one step from the aisle to the upper seats. The floor for the lower tier of seats is 14 in. below the level of the aisle.

The car is constructed with a modified turtle-back roof. The ceiling curves with the roof which affords ample head room for the occupants of the upper tier of seats. As shown in the illustration of the interior of the car, adequate hand-holds are provided to facilitate passengers entering or leaving their seats. The steps are surfaced with "non-slip" aluminum treads. The seats, which are installed in pairs facing each other, are covered with green plush of a small-figure design. Ceiling lights are installed in the upper deck as shown in the illustration, while small-bracket lights with inverted pyramid-shaped frosted shades are used to illuminate the space occupied by each pair of seats in the lower tier. Double windows are provided for each pair of seats on both upper and lower tiers. Two luggage racks, placed one above the other are located between each pair of upper-tier seats and above the space occupied by the seats in the lower tier.

A feature of the car construction is the system of ventilation. The turtle-back roof is of double construction with special insulation under the roof and above the ceiling. An air space is provided between the roof and ceiling for exhausting air which passes from the interior of the car through a number of register openings in the ceiling. Referring to the illustration showing the exterior of the car, the roof is constructed with the straight section raised 1½ in. above the front and rear slopes at the ends. This provides an opening which extends over the top from the eave on one side of the car to the eave on the opposite side. Air enters the opening in the end toward which the car is moving and leaves at the opposite end, thus setting up a circulation which exhausts the air from the inside of the car. This system is supplemented by Utility exhaust ventilators which are installed in the roof of the car. The height overall from the rail is approximately 14 ft.

The new double-tier cars will be built for trailer service if the trial installation proves satisfactory and consideration is being given to the possibility of making them up in solid trains to be hauled by electric locomotives instead of being used in multiple-unit operation.

The coach was on exhibition at the Pennsylvania station, New York City, August 9, 10 and 11, and was placed in regular service on August 13.

THE NEW YORK, ONTARIO & WESTERN has applied to the Interstate Commerce Commission for authority to establish passenger fares on the basis of two cents a mile, between New York and Weehawken and certain points on its line, effective on October 1.

PESSIMIST OR OPTIMIST?—**THE HARTFORD EASTERN**, which has a line of 42 miles from Hartford, Wash., into the Cascade mountains, has applied to the Interstate Commerce Commission for permission to suspend service "at least until January 1, 1935," because of its inability to obtain sufficient patronage to pay operating expenses, "which said condition has prevailed for several years past and which said condition, applicant has every reason to believe, will continue until the first day of January, 1935, and perhaps for a longer period." The board of trustees of the company held a meeting last month and decided that they could "see no hope of improvement in the situation" prior to 1935. No mention was made of any particular occurrence expected at that time.

Fr

M
Sept
presi

hav
tral
sitio
bot
Ag
the
the
Ma

I
Fre
rela
und
tra
con
The
the
Th

French Succeeds McDonald as Head of Maine Central

McDonald becomes president-retired—French to retain present position as president of Boston & Maine

MORRIS McDONALD, for the past nineteen years president of the Maine Central, will retire from active service at his own request on September 1, being succeeded by Edward S. French, president of the Boston & Maine. Mr. McDonald will

sulted from many instances of close co-operation between them, such as the operation of through runs of locomotives of each railroad over the lines of the other, and the recent suspension of operations on 32 miles of Boston & Maine line in northern New Hampshire in



© Bachrach

Morris McDonald

have the title of president-retired of the Maine Central; while Mr. French will also retain his present position with the Boston & Maine. As executive head of both companies, he will, as announced in the *Railway Age* of August 6, divide his time henceforth between the Maine Central's headquarters in Portland, Me., and the general offices of the Boston & Maine in Boston, Mass.

Two Companies Have Many Common Interests

Mr. McDonald's retirement and the election of Mr. French as president of both railroads are in no way related to the program of railroad consolidation now under discussion; nor is any merger of the Maine Central and the Boston & Maine under consideration, according to official announcements issued late last week. The Maine Central and the Boston & Maine are not, these announcements pointed out, primarily competitive. Their problems, however, are almost entirely analogous, so that saving and profit to both roads have re-



© Bachrach

Edward S. French

favor of trackage rights over 26 miles of parallel Maine Central rails. The common interests of the two companies are further emphasized in a statement issued by Mr. French, in which he said:

"As president of both the Maine Central and the Boston & Maine, it will be my intention to further the interests of both roads and the sections of New England which they serve. The problems of the two railroads are similar, and I sincerely hope and believe that they can be operated with added benefit to the communities they serve and to the roads themselves."

Morris McDonald

Morris McDonald, who also at one time held the presidency of both roads, was born at New Albany, Ind., on August 20, 1865. After a public school education, he entered railway service in 1883 with the engineering corps of the Kentucky & Indiana Bridge Company (now the Kentucky & Indiana Terminal), remaining with that road until 1885. In that year he went to

the Louisville, Evansville & St. Louis (now part of the Southern), serving successively until 1892 as paymaster, assistant treasurer, chief clerk to superintendent, trainmaster and superintendent of transportation. During 1893 and 1894 he was chief clerk to superintendent and assistant trainmaster on the Central of Georgia at Savannah, Ga.; and in 1896 he entered the service of the Maine Central as secretary to the general manager. In the following year he was promoted to general superintendent, remaining in that capacity until 1908, when he was further advanced to vice-president and general manager. When the late Charles S. Mellen resigned from the presidencies of the Maine Central and the Boston & Maine in order to give his entire time to the affairs of the New York, New Haven & Hartford, of which he was then also executive head (July, 1913), Mr. McDonald was elected president of the two northern New England roads. In February, 1914, however, he resigned as president of the Boston & Maine to devote himself wholly to the interests of the Maine Central and its subsidiaries, including the Portland Terminal Company, of which he is also president.

Under Mr. McDonald's leadership, the Maine Central was one of the first railroads in the country to meet the problem of highway competition by operating its own motor vehicles, at first through The SamOset Company and since January 1, 1932, through the Maine Central Transportation Company, wholly-owned subsidiaries, of which Mr. McDonald is also the president. It was also the first road in the East to offer shippers the advantages of store-door collection and delivery for l.c.l. freight, putting that service, which is operated in conjunction with the Railway Express Agency, into effect at more than 50 of its principal stations since May 2 of this year.

Edward S. French

Edward S. French, as a native of Portland, who has been associated during his entire business career with the railroads and the industries of northern New England, is well fitted to assume the leadership of the two largest railroads in that territory. He was born on December 11, 1883, and was educated in the public schools of Somerville, Mass., in the Somerville Latin School and at Dartmouth College, Hanover, N. H. (A.B., 1906). He gained his first railroad experience during school and college vacations and in the year immediately after his graduation from college, in the operating and traffic departments of the Boston & Maine. In 1908, when he had been out of college but little more than a year, he was appointed general manager of the White River Railroad, holding that position until 1920 and serving the same road as president from 1920 to 1922. In 1920 he was also appointed receiver for the Springfield (Vt.) Electric Railway, which he reorganized as the Springfield Terminal Railway, becoming president of the latter. In the meantime, Mr. French had been extending his business interests in the granite industry and in other lines, so that it was to him that the communities and industries of northern Vermont turned when the problems of short-line operation became acute in 1925 and 1926. As a result, he returned to railroading in those years as vice-president and general manager of the St. Johnsbury & Lake Champlain (1925-1926) and as president of the Montpelier & Wells River and the Barre & Chelsea (1926-1927). In 1927 he was elected president of the Mystic Terminal Company, the Boston waterfront terminals and docks of the Boston & Maine.

On April 9, 1930, Mr. French was elected president of the Boston & Maine, succeeding the late George

Hannauer and replacing Acting President Thomas Nelson Perkins, now chairman of the board. During his administration, the program of physical rehabilitation initiated by Mr. Hannauer has been continued; while his direction of the Boston & Maine, in times when railroads have been hard pressed, has been marked by success in meeting the emergency caused by a considerable decrease in gross revenues. In spite of a tremendous drop in income, the Boston & Maine has been able, under President French's leadership, to maintain its operating efficiency and to keep its ratio of operating expenses to gross revenues fairly constant. Like the Maine Central, it has been active in meeting highway competition through its subsidiary, the Boston & Maine Transportation Company; while it was also a leader in establishing store-door collection and delivery at important points on its lines, using local truckers in the inauguration of that service for l.c.l. freight on May 16 of this year.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended July 30 showed an increase of 9,557 cars as compared with the week before, to a total of 510,687 cars. This was a reduction of 251,131 cars as compared with the corresponding week of last year and of 409,094 cars as compared with 1930. Coal loading showed an increase of over 10,000 cars as compared with the previous week while there was little change in the other commodity classifications. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Districts	Revenue Freight Car Loading		
	Week Ended Saturday, July 30, 1932	1931	1930
Eastern	118,152	173,002	203,165
Allegheny	97,179	148,472	183,383
Pocahontas	33,774	45,268	52,828
Southern	71,953	106,845	120,043
Northwestern	63,375	107,155	146,256
Central Western	83,285	115,617	141,561
Southwestern	42,969	65,459	72,545
Total Western Districts	189,629	288,231	360,262
Total All Roads	510,687	761,818	919,781
Commodities			
Grain and Grain Products	40,509	51,520	62,710
Livestock	14,527	19,797	17,720
Coal	87,231	119,565	137,633
Coke	2,325	4,808	8,542
Forest Products	15,410	27,373	41,428
Ore	6,547	35,342	58,105
Mdse., L.C.L.	166,945	213,942	234,392
Miscellaneous	177,193	289,471	359,251
July 30	510,687	761,818	919,781
July 23	501,130	742,481	919,301
July 16	504,094	757,989	928,271
July 9	416,950	762,444	915,985
July 2	489,273	667,630	792,053
Cumulative Total	16,045,005	22,045,217	26,900,212

Car Loading in Canada

Car loadings in Canada for the week ended July 30 amounting to 36,548 cars were 229 cars less than for the previous week and 10,344 cars less than for the corresponding week last year. After adjusting for seasonal variations, the index rose from 60.44 to 61.13.

Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada	
July 30, 1932	36,548
July 23, 1932	36,777
July 16, 1932	37,735
July 25, 1931	46,892
Cumulative Totals for Canada	
July 30, 1932	1,225,242
July 23, 1931	1,445,383
July 26, 1930	1,767,320
	590,591
	802,985
	1,034,767

Robert P. Lamont Resigns as Secretary of Commerce

Former head of American Steel Foundries gives up Cabinet post—Will become president of American Iron and Steel Institute

ROBERT PATTERSON LAMONT, at one time president of the American Steel Foundries and since March 4, 1929, Secretary of Commerce in President Hoover's Cabinet, has resigned from the latter position in order to re-enter private business. The retirement from public life of the former railway supply executive was announced by President Hoover on August 3, in a statement in which he said: "Secretary of Commerce Robert P. Lamont has found it necessary to resign. . . . Mr. Lamont has remained in his position at great sacrifice for several months at my request. I regret extremely his loss from the Cabinet as his abilities and service have commanded the respect and confidence of the entire country."

Mr. Lamont, according to an announcement by Charles M. Schwab, chairman of the board of the Bethlehem Steel Corporation, will assume the office of president of the American Iron and Steel Institute, being slated for election to that position at a meeting of the board of directors to be held on August 18. Mr. Schwab, as chairman, will continue as the chief executive officer. Spokesmen for the steel industry anticipate that the Institute, which has previously been mainly a bureau for the collection, compilation and dissemination of iron and steel statistics, will, under the joint guidance of Mr. Schwab and Mr. Lamont, expand its activities to a considerable extent, taking up problems of price and wage policies, tariffs, foreign markets, etc., to the advantage of the entire industry. Mr. Lamont's election is generally considered as a progressive step in the direction of a long-planned reorganization, designed to make the Institute a more aggressive and vital element among steel manufacturers.

Robert P. Lamont was born at Detroit, Mich., on December 1, 1867. After being graduated from the University of Michigan in 1891 with the degree of B.S. in Civil Engineering, he began his business career as an engineer for Schieler & Schinglan, contractors, who did much of the important work for the first Chicago world's fair. From 1892 to 1897, Mr. Lamont was secretary and engineer of this company; and in the

latter year he became first vice-president of the Simplex Railway Appliance Company. When that organization was acquired by the American Steel Foundries, in 1905, he was advanced to president, at the same time being elected first vice-president of the parent company. Seven years later, in 1912, he was elected president of the American Steel Foundries, which position he held continuously, except for about one year of military service during the war, until March, 1929, when he joined President Hoover's Cabinet as Secretary of Commerce. As president of the American Steel Foundries, he was chairman of the board of the Griffin Wheel Company after its acquisition by the former organization; while he has also served at various times as a director of Armour & Company, Montgomery Ward & Company, the International Harvester Company, the American Radiator Company and the Illinois Bell Telephone Company.

His military service began in February, 1918, when he entered the army as a major, and from October of the same year to February, 1919, he was chief of the procurement division of the ordnance department, with the rank of colonel.

Colonel Lamont has always taken an especial interest in welfare work on behalf of the employees of the various enterprises with which he has been associated, and is given the principal credit for having installed emergency hospitals and dining and rest rooms in plants of companies of which he has been the head.

For many years prior to his appointment as Secretary of Commerce, one of Colonel Lamont's major interests was a directorship in the Railway Business Association, which has devoted itself to problems affecting the welfare of the railway equipment and supply manufacturing industry and especially to exerting its influence in behalf of fair and constructive regulation of the railways. Colonel Lamont will be succeeded as Secretary of Commerce, according to President Hoover's announcement, by Roy Dikeman Chapin, of Detroit, Mich., now chairman of the board of the Hudson Motor Car Company.



Robert P. Lamont

Accountants Meet at Buffalo

R.A.O.A. hears stirring appeal by E. C. Buckland—Seeks
indefinite postponement of depreciation order

THE Railway Accounting Officers Association held its forty-fourth annual meeting in Buffalo, N. Y., on August 2-4. In attendance, as was to be expected, there was a decrease from previous years (155 members, 138 guests and three honorary members being the registration). The assembly lacked nothing in animation, however, nor in frank and sincere attention to the important problems falling within its field by reason of the reduced registration.

Buckland Urges Defense of Railways

The keynote of the meeting was struck early in the proceedings by E. G. Buckland, chairman of the board of the New York, New Haven & Hartford and president of the Railroad Credit Corporation. Mr. Buckland frankly avowed that he was a missionary seeking converts, who would absorb and disseminate the essential facts about the present railroad situation. As the text for his address he chose the recent statement to the public of the Association of Railway Executives (*Railway Age*, July 23, 1932, page 118). He had copies of this policy which were distributed among those in attendance and, beyond question, the theme he expounded definitely set the tenor of discussion at the convention.*

"If the railroads," said Mr. Buckland, "should go out of business, the United States would go out of business with them. Rail transport, being a necessity to our social and economic life, must be performed, but by whom? The alternative of private operation is government operation. The result of the government operation for the twenty-six months succeeding January 1, 1918, and the six months guaranty period following was unsatisfactory both in performance and in financial results. There may have been some excuse for failure to perform; there was none for the deficit of \$1,600,000,000, which the director general of railroads said in his annual report for the year 1924, had been incurred during the period of government operation and paid for by general taxation. The record of government operation showed neither efficiency nor economy."

He then reviewed some of the striking statistics which record the improvement in operating performance under private operation since the war.

Continue in Charge Men of Proved Ability

"This," he continued, "is the record of efficiency and economy which proves that the railroad officers and employees of the United States have done a good job and are entitled to be continued in it. No one claims that, even so, perfection has been attained; more economies and greater efficiency are yet to be accomplished, and the way to achieve them is to continue in charge the men who have already made so enviable a record."

"In fairness to them, however, a survey should be made of unfair conditions under which they are laboring,—conditions due to legislative prohibitions imposed upon them but from which their competitors are free. If the transportation agencies of the United States are to attain their full stature of economical and efficient

* Mr. Buckland's speech was ordered to be printed in full and those interested may secure copies upon application to E. R. Woodson, Secretary, R.A.O.A., Transportation Building, Washington.

service, there must be equality of opportunity,—'a fair field and no favor' for all forms of transport. This means that the railroads must be relieved of some of the regulation which is a hindrance to the development of their transport ability, and what is more, that their competitors must be subjected in the end to similar regulation. Theoretically, the railroads might claim that since their competitors are unregulated, there should be no regulation of any transport agency. I believe this to be unsound and against the public interest.

"Beginning with the Granger cases in the late 70's, codified in the Interstate Commerce Act in 1887 and in the amendments since, the United States has evolved and enforced regulatory practices applicable to rail transport, because during that period it was in many respects a monopoly. That the carriage of persons and property by rail has ceased to be a monopoly in too evident to require argument. The advent of the improved highway, the motor bus and the motor truck, to say nothing of the other forms of competition, have opened the field of transport and abolished monopoly therein. If that field were now free to all upon the same terms, nobody could fairly complain, but the regulations which applied to the rail carriers in days of monopoly still apply to them, although their competitors are under practically no regulation whatever.

Equality of Treatment to Shippers

"Among the regulations placed upon rail carriers are; to treat all shippers alike; to treat all localities without prejudice, preference or discrimination; to make no secret rates, but to carry only at published rates; to refrain from rebating or in any other way giving one shipper advantage over another. All of them are now the law because of their inherent fairness. But these regulations which apply to railroads and violation of which means a fine or imprisonment, do not apply to their competitors. These competitors are currently performing transport under practices forbidden by law to railways.

"The sentiment of the people toward the regulation of transport agencies arose from the evils experienced by shippers from nearly fifty years lack of regulation prior to 1887. Such lack of regulation, following the logical law of economics, meant a lower charge to the large shipper than to the small shipper, and so enriched the former and threatened to destroy the latter. The success of some of our largest corporations followed the enjoyment of lower rates for transport and the crushing of smaller competitors who were forced to pay higher rates.

"The laws enacted and the regulations imposed were in substance legislative decorations that transport was so essentially affected with the public interest that the natural flow of economic law must be dammed to protect the smaller shippers.

"Those who are clamoring for unrestricted regulation of highway and water transport ignore or have forgotten these evils. They exist today in a menacing degree. The shipper who can offer for water carriage a shipload or for highway movement one hundred truckloads per day, not only can receive, but is receiving, a lower

rate than the shipper who can offer a less quantity. Unregulated transport by water and highway means a return to the bad old days of discrimination, rebates and secret rates and the gradual crushing of smaller industries.

"The railways only ask 'a fair field and no favor'. If the American people are to reverse their policy and remove all transport from regulation, the railroads may not complain, however, unwise such a reversal of policy might be. I think it would be a calamity to return to those days. The alternative is to extend to highway and water carriers the same degree of regulation which experience has proved essential to the continued orderly development of the nation.

A Concrete Program

"In my judgment, action along the following general lines should be taken to bring about this result:

"Changes in existing federal legislation to permit the establishment of rates and adjustments thereof to the extent required fairly to meet competition however arises;

jurisdiction of the Interstate Commerce Commission. Each should be required to obtain a certificate of convenience and necessity for the service to be offered, which should be issued only after assurance of financial responsibility, quality and permanence of service and its effect on existing necessary service. The same regulations should be imposed upon them as upon the railroads as to publishing and adhering to 'just and reasonable' rates. The railroads should be allowed to perform highway service, which should include the right to purchase existing lines or establish new lines. So-called contract carriers should be under the jurisdiction of a regulatory body and required to observe minimum rates, rules and practices imposed by such authority.

"Legislation by the states should be obtained to distribute more equitably the cost of constructing and maintaining highways upon the users of such highways. Commercial motor vehicles are currently receiving a subsidy to the extent that they are failing to share that burden. The users of private automobiles, especially of the less expensive type, are paying license taxes out of propor-



W. B. McKinstry



W. C. Carrick



J. G. Livengood



E. R. Woodson

ing. Frankly this means the limitation of the Commission's power to suspend rates and the privilege to railways to make rate changes on shorter notice than the thirty days now required by law.

"Permission to railways to engage in transport on inland waterways, including intercoastal, and with foreign countries under such regulation as may at any time be applied to other water transport. Retirement of government from the operation of barge lines in competition with private enterprise.

"Legislation should also be enacted to stop the useless expense of valuation of railroads and prosecution for recapture of income alleged, but not proved to have been earned. It is tragically ironical to witness railroads apply for loans from The Railroad Credit Corporation and the Reconstruction Finance Corporation, while they are subject to claims for recapture of substantial amounts under the recapture clause. If the doctrines of the O'Fallon case and the United Railways and Electric Company of Baltimore case are applied to the valuations upon which these claims for recapture are predicated, it seems safe to say that it will be a long time, if ever, before the government recovers anything from this \$360,000,000. This probable result of law suits seems to be apparent to the Interstate Commerce Commission, which advocates the repeal of the recapture clause. Legislation to that end would remove a serious cloud.

"So far as highway competition is concerned, all common and contract carriers should be placed under the

tion to the wear and tear which they impose upon the highways. There should be a more equitable distribution of license taxes based upon the concentrated weight imposed upon highways by heavily loaded vehicles. This will take away both the subsidy now afforded commercial vehicles and compel them to bear their fair share of the cost of maintaining highways and at the same time will relieve the owner of the private automobile of the unfair tax now imposed upon him.

"The railroads want and must have 'a fair field and no favor'. The foregoing recommendations have been made on the premise that adequate transportation facilities are essential today and will be tomorrow for the economic welfare of the country. The railroads, which carry today and must continue to carry the great bulk of freight and passenger traffic, can meet this situation only on a basis of equality of opportunity. There should be, first, a relaxation of existing regulation imposed upon rail carriers in view of the recent and rapid development of competitive forms of transport and second, the application of appropriate regulation to those new forms of transport which have entered the field of service, formerly occupied exclusively by the railways."

President Palmer's Address

Preceding Mr. Buckland's address on the opening day of the convention, was the customary invocation

and a message of greeting from Mayor Roesch of Buffalo. Howard S. Palmer, president of the association and vice-president of the New York, New Haven & Hartford, introduced Mr. Buckland. Following Mr. Buckland's address, he delivered the presidential address, which follows in part (complete copies are to be published by the Association) :

The current situation has placed exceptional demands upon the accounting officers. The necessity for keeping in touch with business conditions, forecasting income, budgeting of expenses with reduced revenues, watching the financial situation not only of our own particular companies, but also that of companies with which we are doing business, has meant that the accounting officers have had much less time to devote to the affairs of the association than would have been the case under normal conditions.

Notwithstanding the call for practically all of our time and attention to our own individual problems, we have carried on through the association many activities during the past year.

Your association assisted with the preparation of data in connection with Ex Parte 103, the application for a 15 per cent increase in freight rates. The Commission suggested the possibility of a limited increase if the proceeds thereof were given to needy carriers. The railroads accepted this limited increase in rates under a plan known as the Marshalling and Distributing Plan—1931, which provided for the proceeds from the emergency charges to be utilized as loans to needy railroads in order to prevent as far as possible default in fixed interest obligations.

Both the committees on general accounts and freight accounts spent much time and study formulating the necessary accounting provisions for handling this pooling arrangement. To meet the requirements, it was necessary for these committees to devise a workable accounting method complete with detailed instructions. These instructions were issued to all carriers through the secretary of your Association.

As indicated in my letter of February 12, 1932, to the members of the association, our efficient Secretary, E. R. Woodson, on January 25, 1932, was appointed vice-president and comptroller of the Railroad Credit Corporation—the medium through which the funds realized from the increased freight rates are being handled. The appointment was a tribute to him and to the Railway Accounting Officers Association. E. R. Ford, who has capably taken over some of Mr. Woodson's responsibilities, was given the title of assistant to the secretary.

Revision of Classifications

The most important subject that has been before the association during the past year has been on the docket for several years; namely, the proposed revision of the accounting classifications and, correlated with this, the new depreciation account order.

The sub-committee of the Committee on General Accounts, reappointed this past year to handle the proposed revision, has continued its work throughout the year, spending much time and study on this subject, and has had many conferences with representatives of the Interstate Commerce Commission. Considerable progress has been made.

This same Committee has also done much work in connection with the new depreciation accounting order. It is to be hoped that the Interstate Commerce Commission will see its way clear to an indefinite postponement of the application of this order. Another subject which has always occupied the attention of our Association has been the question of simplification of accounting. Our freight accounting officers have cooperated in working out a plan of simplified settlements, which is being used covering l.c.l. traffic. This has been accomplished by the use of so-called road-to-road percents. Studies and tests have demonstrated that substantially the same results are attained under this plan as under the older methods at a considerable saving in accounting expense.

Simplifying Interline Accounting

The problem of temporary divisions of new joint freight rates, where permanent divisions have not been established is one of the most difficult matters with which the freight accounting officers must now contend. The use of temporary divisions is generally with the understanding that permanent divisions when agreed upon will be made retroactive, and where they differ from the temporary divisions used, a restatement of the accounts is required. This subject is of serious concern to all railroads because of the many carriers involved and the great expense of making final adjustments where permanent divisions are different from temporary ones. I recommend that this matter be given further consideration, bringing all possible pressure to bear on the traffic executives, and calling it to the attention of our chief executives, so that

wherever possible permanent divisions may be made effective with new rates, in order that the substantial accounting expense which is occasioned by these temporary divisions may be materially reduced or entirely eliminated.

Another railroad problem which is becoming continually more important is the question of federal taxation. The 1932 revenue bill recently enacted by Congress with its many provisions for raising additional revenue for the government clearly indicates the necessity for the proper accounting officers to keep in close touch with taxation measures. The problem of taxation is very closely allied with accounting, and I would recommend that the association consider the advisability of appointing one person who would devote his entire time to the study of questions of taxation, in order that the interests of the carriers as a whole be more fully protected.

Committee Reports

The report of the Committee on General Accounts was presented by Chairman W. C. Carrick, general auditor of the Richmond, Fredericksburg & Potomac. One of the most important activities of this committee was the preparation of testimony in connection with the increased freight rates case, Ex Parte 103, and the setting up of accounting machinery necessary for the collection and recording of revenues received under this decision to be entrusted to the Railroad Credit Corporation. The committee also devoted considerable time and study to the proposed revision of the accounting classification and the order of the Commission requiring accounting for depreciation. In this latter connection the following resolution was adopted by the committee and sent to R. H. Aishton, chairman of the executive committee of the Association of Railway Executives:

WHEREAS, The Railway Accounting Officers Association's Committee on General Accounts has had before it almost continuously since October, 1920, the subject of depreciation accounting for steam railroads, and

WHEREAS, The Committee on General Accounts on October 21, 1921, referred this subject to the Chairman of the Association of Railway Executives requesting that a committee of railroad officers be appointed, upon which accounting officers should be represented, and

WHEREAS, The Executives accepted the suggestion and in discussions and hearings before the Commission on this subject, members of the Accounting Officers Association have taken part, and subsequent thereto, by instructions of the Executives have been the medium through which contact and conferences have been maintained with representatives of the Commission in the application of the Commission's Order, Docket 15,100, and have reviewed the tentative classifications of accounts embodying the proposed rules to administer the depreciation order, the accounting officers have had an opportunity to study the proposals as presented by the Commission in its:

- (a) Report on Depreciation Charges of Steam Railroad Companies, No. 15,100, August 23, 1923.
- (b) Report and Order—Depreciation Charges of Steam Railroad Companies, No. 15,100, decided November 2, 1926.
- (c) Proposed Report—Depreciation Charges of Steam Railroad Companies—(Commissioner J. B. Eastman) August 15, 1929.
- (d) Report and order—Depreciation Charges of Steam Railroad Companies—No. 15,100, decided July 28, 1931.

which discussions with the representatives of the Commission have always been had with the understanding as outlined in the following resolution of the Committee on General Accounts:

"WHEREAS, This Committee has, for several years, been cooperating with the representatives of the Interstate Commerce Commission in the revision of the Accounting Rules, and the Director of the Bureau of Accounts of the Commission having presented to the Committee certain suggestions as a basis for incorporating, in the tentative Classification of Investment in Road and Equipment, the provisions of Order No. 15,100 of the Commission regarding depreciation charges of Steam Railroad Companies.

"RESOLVED, That the Committee deems it necessary before proceeding to further consideration of the tentative revised accounting classifications, to affirm that its cooperation with the Commission, in the tentative revision of the accounting classifications hereafter issued by the Commission directly or through the R.A.O.A., shall not be construed as an accept-

ance or approval by the Committee or any member thereof of the principles contained in the Commission's Order No. 15,100 and shall not prejudice the right of any carrier individually or the carriers collectively to contest any of the provisions of said Depreciation Order."

WHEREAS, After a study of the provisions for depreciation accounting contained in the proposed accounting classifications the Committee cites the following objections as illustrative of the difficulties to be encountered:

1. The suggested plan for accounting for track structure, that is, charging rail, ties and other track material in replacement to Investment Account and equalizing these actual maintenance charges over a period of years through depreciation accounting; the elimination of repair accounts in maintenance requiring uniform charges to depreciation accounts, destroying executive control of maintenance expenses irrespective of current income.

2. The list of units as submitted, which breaks down many units into minor as well as major parts for which separate investment, depreciation and retirement accounting would have to be maintained.

3. The method proposed in the classification submitted by the Commission for restating the Investment Accounts, and setting up an Investment Suspense account, and also the requirement of the Order for the ascertainment for record purposes of the amount of estimated past accrued depreciation and the exclusion of such depreciation from current operating expenses as and when the property is retired.

4. The requirement that records be kept by valuation sections and separately by "owned and used" divisions of property, i.e., property owned and used, property used and not owned, etc.

5. The unwarranted expense involved in ascertaining data on which depreciation is to be based and the additional expense to maintain records for currently estimating and accounting for depreciation.

THEREFORE, BE IT RESOLVED, That the Committee on General Accounts hereby calls this matter to the attention of the Executives with the recommendation that prompt action be taken to the end of obtaining, if possible, an indefinite postponement of the Order.

The report of the activities of the committee in connection with the proposed changes in accounting was presented by J. J. Ekin, comptroller of the Baltimore & Ohio, chairman of the sub-committee which had this subject in charge. Considerable discussion was aroused by Mr. Ekin's report. It was brought out that informal discussions have taken place constantly with representatives of the Interstate Commerce Commission and that there is in existence a tentative revised classification of accounts prepared by Commission representatives with the co-operation of members of the association. This classification, however, would have to be considerably revised in the event that indefinite postponement of the depreciation accounting order is granted.

Committee on Freight Accounts

The report of the Committee on Freight Accounts was presented by Chairman J. T. Davis, auditor of freight traffic of the Pennsylvania. Mr. Davis expressed a tribute to the memory of A. J. Moran, formerly assistant comptroller of the Erie, who was a member of this committee for many years, and who always took an active and courageous part in the work of the association. Mr. Moran, he said, had continued his work with the committee on freight accounts right up to the time of his death, in spite of intense suffering. Mr. Davis' tribute was echoed by many others as the convention proceeded. The committee reported on 41 subjects, all of which appeared in the printed Agenda distributed in advance of the meeting and only minor changes were made in the report as actually presented to the convention. One of the major questions that the committee had before it was the problem of distinguishing between car load and less than car load traffic in connection with container cars and merchandise loaded by forwarding companies. This subject was handled in conjunction with the committee on general accounts and that on statistics.

Discussion brought out the valuable work being done by this committee in simplifying interline accounting and it was strongly urged that the executive accounting officers in every way should support their freight accountants in the endeavor to reduce the complexity of interline accounting.

Favor Appointment of Tax Specialist

W. C. Wishart, vice-president, New York Central, made a short address on the importance to the railroads of federal taxation, calling attention to the recent change in the federal law under which the government charges the carriers 6 per cent on unpaid tax balances, whereas it allows the railroads only 4 per cent on funds deposited with the government in advance of collection dates. Mr. Wishart strongly urged that the railroads should designate a responsible officer in Washington to follow developments and protect railway interests in such matters. A motion was made and carried that the association go on record as approving, in principle, Mr. Wishart's proposal.

The report of the Committee on Passenger Accounts was given by Chairman T. H. Ochiltree, auditor of passenger accounts of the Union Pacific. The committee reported on 26 subjects, among which new forms of railroad passenger service played an important part.

Among these subjects were the settlement of interline accounts with bus lines, the checking of baggage from hotels and the transportation of automobiles for passengers.

The Committee on Disbursement Accounts reported on 12 subjects. The chairman of the committee, T. J. Gracey, regional auditor of the Canadian National in presenting the report told something of the Committee's activities as follows:

Activities of the committee during the past year have been somewhat limited. The number of subjects submitted was below normal for which several reasons may be ascribed, and not the least of these is that the trying times of past two years have imposed an enormous amount of extra work upon those engaged in disbursement accounting. This statement is made without any thought of minimizing the worries which we know have been the lot of chief accounting officers, but it does follow that in times when economy is held up everywhere in bold capital letters, a great deal of responsibility devolves upon the disbursement accounting officer, whether the action be initiated with or directed to him. He is not only concerned with work within his immediate jurisdiction, but is called upon to develop matters in every phase of railroad operation. With their time and thoughts so completely absorbed, it is not surprising that a lesser number of items should be placed before your Committee for consideration.

On the other hand, I doubt whether in history there has been a more propitious time for co-operative effort, not only among the respective departments, but among all railroads. I think it would be safe to say that there is not represented here a carrier which has not made some material change in its plan of accounting, and consequently would be enabled to pass along to the association something which would be beneficial to its members. It is, however, appreciated that many of the practices instituted are, to some extent, in the experimental stage, but possibly before the next annual convention these will have proven themselves, and the incoming committee with the support of the other members, may have the opportunity of presenting to the association some really helpful information.

Machine Accounting

Incorporated in the agenda for this meeting is a supplementary report on the use of accounting machines in disbursement work. This is a very live subject at the present time, but space does not permit of its being covered in more than a general way, as new uses for the machines are being found almost daily, and their adaptation extended to practically all forms of time-keeping, distributions, labor and material, and other analysis work in the accounting department. The results are measured entirely by volume, and whilst possibly there may be no particular economy in certain machine operations, their inclusion increases the production and consequently the efficiency of the

plan, in the same sense that net revenues are predicated upon the freight or passenger traffic handled beyond certain minima.

Local conditions and organizations vary on different railroads, thus making it impossible to outline a plan of machine accounting which could be adopted uniformly, but it is hoped that data furnished may assist those interested in finding a solution to some of their problems. However, wish to repeat that volume is the keynote of success, and this can only be attained under some plan of what is generally known as direct accounting. That this has much to commend itself cannot be denied—it also has some disadvantages, but during the past year or two there appears to be a tendency toward adoption of the direct or centralized plan.

While our thoughts are now especially directed along lines of economy, it may be in order to consider the possibilities of eliminating some of the voluminous details supporting bills between carriers for joint facility operations. In cases where expenses are apportioned on tonnage, wheelage, car mileage, or other bases, the collation of data and preparation of details involve considerable labor, and although we do not advocate anything which might have a tendency to lessen users' control of expenditures, there are opportunities for reciprocal arrangements which would reduce the detail, the interests of respective railroads being protected by periodical audits.

One subject on which the committee reported, i.e., accounting for gasoline and license taxes on railroad-owned motor vehicles, was referred to the Committee on General Accounts.

C. Petersen, auditor of freight accounts of the Boston & Albany, and chairman of the Committee on Overcharge Rules, presented that committee's report, which covered 21 subjects. In this connection J. S. Fox, auditor of freight overcharge Claims of the Chicago & North Western, presented a paper telling of the important work performed in this branch of the accounting department. This informative address was ordered to be printed for distribution among the membership and copies may be obtained on application to the secretary.

The report of the Committee on Statistics dealt with the measure of locomotive performance as to capacity and the co-operative work which it did with the Committee on General Accounts on the question of accounting for container traffic.

Constitutional Amendments

Brief reports from other committees were presented and the association adopted the constitutional amendment proposed at last year's convention giving permanent standing to the present special committees on accounts for railroads in Mexico and on accounts for motor vehicle and air transport. An additional constitutional amendment was adopted after considerable discussion opening up a new form of membership in the association, i.e., associate membership, which status is available to former active members retired under pension rules or assigned to duties other than as accounting officers. Heretofore the association has had but two classes of membership—active and honorary.

Other Business

E. M. Thomas, comptroller of the Chesapeake & Ohio, who was chairman of the Committee the association named to present the railroad case in Ex Parte 107, accounting for contributions to charitable organizations, spoke briefly of this case. The question was raised in New York State where the Public Utilities Commission ordered a telephone company to charge contributions to charity to Surplus instead of to Operating Expenses. The Railway Accounting Officers Association, represented by E. R. Woodson, its secretary, as counsel, defended the charging of such contribu-

tions to Operating Expenses. The Interstate Commerce Commission has not yet rendered its decision in this case.

Officers for the ensuing year were elected as follows: president, W. B. McKinstry, comptroller of the Illinois Central; first vice-president, W. C. Carrick, general auditor of the Richmond, Fredericksburg & Potomac; and second vice-president, J. G. Livengood, comptroller, Missouri-Kansas-Texas. The secretary, E. R. Woodson, who is also vice-president and controller of the Railroad Credit Corporation, was re-elected. The following were elected to membership on the Executive Committee: G. E. Bissonnet, general auditor, Union Pacific; W. C. Wishart, vice-president, New York Central; and J. J. Ekin, comptroller of the Baltimore & Ohio.

A motion was made and carried that the selection of the time and place for the next annual meeting be left to the Executive Committee.

Honorary memberships were conferred upon J. F. Howe, former auditor passenger receipts, Denver & Rio Grande Western; C. I. Sturgis, vice-president, secretary and treasurer, Chicago, Burlington & Quincy; T. O. Edwards, former general auditor of the Southern Pacific; J. Leslie, formerly vice-president and treasurer, Canadian Pacific; and E. J. Bloodgood, former assistant general auditor, Chicago & North Western. Memorials were read for 13 members of the association who have died during the past year.

A.R.A. Report on Oil-Electric Locomotives

A CHART showing the number and aggregate horsepower of Diesel electric locomotives in the United States was published in connection with the report of the Committee on Locomotive Construction which appeared in the June 25, 1932, issue of the *Railway Age*, page 1077. The solid line on the chart was shown as that of "engine horsepower" while the dotted line showed the increase in the number of Diesel-electric locomotives in 1925 to 1932, inclusive. This was incorrect. The full line shows the increase in the number of locomotives, while the dotted line shows the increase in engine horsepower. The corrected chart is shown herewith.

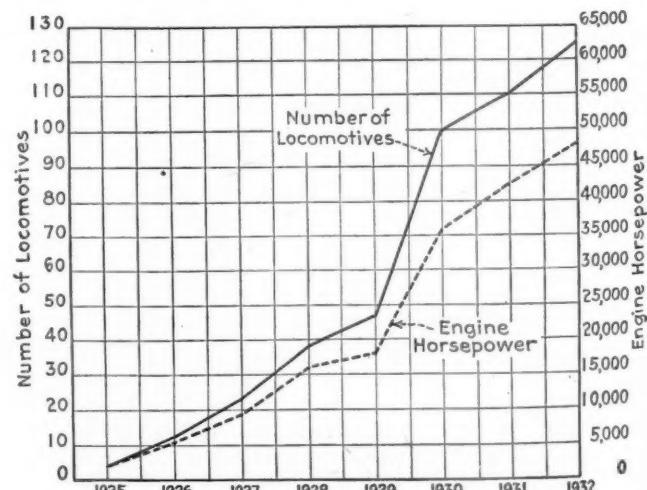


Chart Showing the Number and Aggregate Horsepower of Diesel-Electric Locomotives in the United States

NEWS

Individual Roads to Decide Supply Loans

Executives take no collective action on proposal to buy equipment with R.F.C. funds

The Association of Railway Executives, at a meeting in New York on August 10, took no official or collective action on the proposal that railroads borrow from the Reconstruction Finance Corporation for the purpose of repairing equipment and perhaps for the purchase of new equipment. The matter is thus left to the individual roads.

A statement issued after meetings of the advisory committee and of the member roads follows:

"The Advisory committee of the Association of Railway Executives met today and discussed the proposition which had been made that as a means of increasing employment during the fall and winter months the railroads of the country consider borrowing from the Reconstruction Finance Corporation money for the purpose of repairing equipment needing repairs, and perhaps for the purchase of new equipment. Several interviews had been held by individual railroad executives with officials in Washington on this subject and tentative propositions had been made under which it might be possible for the railroads to act in this respect.

"The Advisory committee, after full consideration, realizing that the problem was one for decision by each road but that the critical conditions of unemployment were such that grave consideration should be given to the matter, referred the matter to the meeting of member roads held in the afternoon, without recommendation but with a statement that it was so referred in order that each road might give it full consideration in view of all the circumstances and conditions, in order to determine whether or not such individual road could make use of funds which might be available through the Reconstruction Finance Corporation.

"No official or collective action was taken at the meeting, and the matter is left for the consideration of each member road."

At the morning meeting of the advisory committee Daniel Willard, president of the Baltimore & Ohio, read a memorandum presenting the proposal and outlining the terms under which the loans would be available. It is understood that the R.F.C. would be willing to fix an interest rate of five per cent on the proposed loans as against the six per cent heretofore charged the railroads.

Truck-Competitive Potato Rate Suspended

The Interstate Commerce Commission on August 5 suspended for seven months tariff schedules published by the Pennsylvania proposing to reduce the rate on potatoes, in carloads, from 15½ cents to 8 cents per hundred pounds, on shipments from Freehold, Cranberry, Hightstown, Robinsville, and other points in New Jersey in the same vicinity, to New York City, to meet purported motor truck competition.

Hungerford on C. N. R. Board

S. J. Hungerford, who was announced as taking the post of acting president of the Canadian National Railways on the resignation of Sir Henry Thornton, has also as a consequence of taking that position become a member of the board of directors, according to an announcement made last week in Ottawa by Hon. R. J. Manion, Minister of Railways and Canals. No move will be made by the government to find a permanent successor to Sir Henry Thornton until after the termination of the Imperial Conference.

Special Truck-Competitive Rates Not Approved

The Interstate Commerce Commission has denied a fourth section application filed by E. B. Boyd as agent for carriers in western trunk line territory for authority to establish and maintain rates between certain portions of the territory, to meet truck competition, based on percentages of the first class rates prescribed by the commission, different from or lower than the percentages applicable between other portions of the territory, without observing the provisions of the long-and-short-haul clause.

Colorado Adopts A.R.A. Crossing Signal Standards

As a result of a hearing held recently, the Public Utilities Commission of the state of Colorado has issued an order, establishing as standard for grade crossing protection the signs and signals illustrated in Bulletin No. 1 of the Joint Committee on Grade Crossing Protection of the American Railway Association. Signs and signals in accordance with these standards are to be used for all new installations and for replacements, the only exception to the A.R.A. requirements being that the commission may authorize the installation of one signal only at certain locations where conditions do not require a signal on each side of the track or tracks.

Fourth Section Relief Denied for Sugar Rates

I. C. C. decision holds that the proposed rates would not be reasonably compensatory

On the ground that the proposed rates would not be reasonably compensatory the Interstate Commerce Commission, Division 2, has denied the application of the transcontinental railways for fourth section relief authorizing them to reduce their rates on refined sugar, in carloads, from San Francisco Bay points to Chicago, Milwaukee, St. Louis and related points without making reductions from and to intermediate points. Commissioner Aichison dissented. The application was grounded on recently developed competition with routes operating through the Panama canal; thence up the Mississippi river from New Orleans, or up the Hudson river from New York through the New York State Barge Canal, by way of Buffalo or Oswego, and over the Great Lakes and, to some destinations, finally by rail from Cairo, St. Louis, Chicago, or Milwaukee.

Supporting the application were two San Francisco Bay refiners, while opposed to it were certain Atlantic seaboard refiners and several Louisiana refiners.

Also it was opposed by eastern and southern rail lines and one southwestern line, the Missouri-Kansas-Texas, all interested in preventing the proposed reductions and protecting the refiners on their lines. "The situation represents more a contest between rival groups of rail carriers than one of competition between rail carriers, on the one hand, and water carriers on the other," the report said. "Various intercoastal steamship lines now carrying most of the traffic, and two barge lines operating on the Mississippi river are also before us, praying for denial of the application. There is no opposition from anyone located at any point intermediate to the origins and destinations involved." In conclusion the report said:

"The record in this case leaves no doubt that the movement of sugar by rail from the refineries on the Pacific coast to Chicago and the other interior points embraced in this proceeding, is steadily diminishing while the movement by water lines is rapidly increasing. It is also clear that the all-rail carriers from the Pacific coast will continue to lose a part of the sugar traffic which so far they have been able to retain unless they readjust their rates so as to place them more in line with the rates

available for transportation by water. The situation is one in which some relief from the long-and-short-haul provision of section 4 would be justified if the existence of competition were the only fact necessary to warrant relief from the provisions of that section. However, our authority to grant such relief is limited by the proviso that we shall not permit the establishment of any charge to or from the more distant point that is not reasonably compensatory for the service performed. We must therefore give consideration to the question of whether the rates proposed by the applicants for the purpose of meeting the competition at Chicago and other interior points will be reasonably compensatory rates within the meaning of the above provisions of section 4. Under applicants' proposal the maximum rate of 62 cents from San Francisco to Chicago would apply over routes varying in distance from 2,258 to 2,890 miles. This rate is lower than the present rates from San Francisco to intermediate points on the short line beginning at Massie, Nev., 294 miles from San Francisco. The rates to points east thereof grade up to a maximum of 84 cents, which is reached at Piute, Nev., 472 miles from San Francisco, and this rate applies to all intermediate points east of Piute included in the total distance of 2,258 miles. It is the carriers' contention that these intermediate rates do not exceed reasonable maximum rates and that the rate of 84 cents to most of the points involved is in fact less than a maximum reasonable rate. In support of this contention they call attention to the fact that although this rate applies for distances of more than 2,000 miles, it is the same as the rate prescribed as a reasonable maximum rate on sugar, in carloads, from San Francisco to intermediate points for distances of less than 1,000 miles in *Phoenix Chamber of Commerce v. A. T. & S. F. Ry. Co.*, *supra*. It is also lower than rates prescribed in the southwestern revision for the transportation of sugar, carloads, from, to and between points in a great part of the intermediate territory involved herein. In that case we found 84 cents the maximum reasonable rate for distances of 1,200 miles and over 1,175 miles. No rates were prescribed in the latter case for distances exceeding 1,500 miles but if the scale of rates prescribed in that proceeding were extended to apply for a distance of 2,258 miles at the same rate of progression as used in that scale for distances of 1,200 to 1,500 miles, the rate on sugar for that distance would be \$1.25. The present rate of 84 cents is 67.2 per cent of the above rate while the proposed rate of 62 cents is only 49.6 per cent of that rate. We can not regard rates for the long hauls involved herein which are so much lower than rates which we have prescribed as reasonable maximum rates for distances of less than 50 per cent under equal or more favorable transportation conditions, as meeting the reasonably compensatory requirement of section 4. We would not be warranted therefore under

the powers conferred upon us by section 4 in granting relief from the provisions of that section to maintain such rates."

Ten Cars of Silk Move East

Ten cars of silk, the largest shipment to travel across the country for more than a year, left Seattle, Wash., on July 27 on an 85-hr. schedule to New York over the Northern Pacific, the Chicago Great Western, the Wabash and the Delaware, Lackawanna & Western. At Chicago, where the shipment arrived on the morning of July 30, one car broke bulk.

Employees Sue Brotherhood

Ten employees of the Pennsylvania, on August 8, filed a suit at Cleveland, Ohio, for \$750,000 damages against the Brotherhood of Locomotive Firemen and Enginemen, alleging it permitted them to be transferred from the Louisville division to the Michigan division of the road in 1918 and causing them to lose certain seniority rights and pay. The men are from Logansport, Ind.

B. & O. and Pennsylvania Establish Bus-Competitive Fares Between Washington and New York

The Baltimore & Ohio and the Pennsylvania have been authorized by the Interstate Commerce Commission to establish on short notice reduced one-way fares between Washington and New York, effective August 10 and expiring November 30, on one train on each road leaving shortly after midnight, carrying coach equipment and various special features, to meet bus competition. The fare will be \$5.65 as compared with the regular rate of \$8.14.

North Western Officers' Salaries Cut

The salaries of non-contract employees of the Chicago & North Western have been reduced 10 per cent as a further economy measure. The reduction, effective August 1, is the third within a year. In addition, the road has placed a five-day week in effect in those departments where it can be done without impairment of efficiency.

The Chicago, Rock Island & Pacific, on August 4, also announced a further reduction in the salaries of executives. Those earning \$10,000 or more will be cut 10 per cent, while salaries of more than \$5,000 will be reduced 5 per cent.

Injunction Sought Against N. Y. Delivery Plan

Four Brooklyn, N. Y., contract terminals have moved to stay the installation of proposed collection and delivery services for carload freight in New York City through an application, filed in the United States District Court at Philadelphia, Pa., for an injunction to restrain the Pennsylvania from putting the service into effect. The delivery plan, which was announced for installation on September 15, was outlined in the *Railway Age* of July 16, page 93.

The plaintiffs in the suit against the Pennsylvania are the New York Dock

Railway, the Bush Terminal, the Brooklyn Eastern District Terminal and the Jay Street Terminal. They allege that the proposed collection and delivery services would constitute an extension of the rail lines which necessitates a certificate of public convenience and necessity from the Interstate Commerce Commission.

Freight Tonnage in 1931

Class I railways in 1931 carried 1,065,034,171 tons of freight, as compared with 2,063,077,591 tons in 1930 and 2,451,601,084 in 1929, according to the Interstate Commerce Commission's annual compilation of freight commodity statistics. Tonnage originated in 1931 amounted to 894,185,637, as compared with 1,153,196,636 in 1930 and 1,339,091,007 in 1929. The tonnage originated in 1931 shows a decrease of 22.46 per cent as compared with the year before. Products of agriculture decreased 11.96 per cent; animals and products, 6.47 per cent; products of mines, 21.89 per cent; products of forests, 37.98 per cent; manufactures and miscellaneous, 25.34 per cent, and l.c.l. freight, 23.24 per cent.

Proposed Revisions in Cotton Rates

Following its notice of a conference to be held on August 16 to consider tariffs proposing revisions in cotton rates from the Southwest to destinations in southern and official territories and Canada, the Interstate Commerce Commission has issued another notice saying that similar tariffs will be filed proposing changes in rates between southeastern points and from southeastern points to destinations in official territory and Canada and deems it advisable that these be considered at the same time. The railroads are proposing new bases of rates to compete with trucks and barges and an effort is to be made to have them passed upon in time so that the effective rates may be known before the shipping season begins.

Illinois Chamber Discusses Railroad Taxes

A trend toward a better understanding of railroad problems by small communities was reported by the Transportation Committee of the Illinois Chamber of Commerce at Chicago on August 4 at a luncheon attended by the representatives of railways, railroad supply manufacturers and members of the chamber. During the roundtable discussion, it was suggested that the Illinois Chamber make a survey in Illinois to determine to what extent railroad taxes support communities in comparison with the tax support of waterways and other forms of transportation. To this end the chamber will cooperate with the railroads. Robert J. Deneen, chairman of the Transportation committee, who presided at the meeting, stated that in analyzing the taxes levied against corporations in the various counties of Illinois and in particular the assessments made against the railroads, the fact becomes apparent that in many of the counties of the state the bulk of all taxes paid emanate from the steam railroads.

He said
realize th
roads in
of the ra
will mea
governm
taxpayer
defunct

Class
Intersta
of 1,081
May. T
856,071.
the cor
summar
in the
or 19.1
tion sha
29.92 p
persons
dle of t
corresp
group c
tures e
505 gre
basis o
each w
a small
compan
West

Rai
fic ter
intersta
to vac
ing th
out th
rates
they s
shock
of th
as "it
losses
ing o
crease
in the
unreg
petiti
free
at th
sonal
ject
comp
ercis
ment
conc
rates
com
mitt
rate
Rev

O
sou
by
tory
D.
Con
con
vis
citi
poi

He said that the public is being made to realize the part being played by the railroads in their lives and that elimination of the railroads either in whole or in part will mean virtual bankruptcy for many governmental units unless the individual taxpayer takes over the burden left by the defunct lines.

Wage Statistics

Class I railways have reported to the Interstate Commerce Commission a total of 1,081,596 employees as of the middle of May. The total compensation was \$130,856,071. Compared with the returns for the corresponding month of last year the summary for May, 1932, shows a decrease in the number of employees of 255,735, or 19.12 per cent. The total compensation shows a decrease of \$55,857,212, or 29.92 per cent. In May the number of persons reported as employed at the middle of the month was 5,066 less than the corresponding figure for April. For the group of maintenance of way and structures employees the employment was 17,505 greater in May than in April. On the basis of the number of hours of work for each working day in the month there was a small increase in employment in May compared with April.

Western Roads Ask Restoration of Livestock Rates

Railroads operating in Mountain-Pacific territory have filed a brief with the Interstate Commerce Commission urging it to vacate its order of June 8, 1931, revising the rates on edible livestock throughout the western district and to restore the rates formerly in effect. The rail lines, they say, are in no position to "act as the shock absorber for the economic distress of the livestock or any other industry" as "it is wholly impracticable to recoup losses in revenue on livestock by subjecting other major items of traffic to increases." The roads take the position that in their efforts to meet the rising tide of unregulated and subsidized forms of competitive transportation they must be left free to reduce rates where necessary and at the same time maintain rates at reasonable maximum levels on traffic not subject to the same extent or at all to such competition and that if they are to exercise their freedom of managerial judgment in so far as rates on livestock are concerned, they must be free to reduce rates for the shorter hauls to meet truck competition and at the same time be permitted to charge proportionately higher rates for the longer hauls not affected by such competition.

Revised Basis Proposed for Divisions of Florida Citrus Fruit Rates

On a formal complaint filed by the southern roads and cross-complaints filed by roads in Official Classification Territory, Examiners Howard Hosmer and D. C. Dillon of the Interstate Commerce Commission have recommended to the commission in a proposed report a revised basis of divisions of freight rates on citrus fruits from points in Florida to points in Official territory. The record

indicates, the report says, that operating costs per unit of traffic are higher in the southern region than they are in Official territory but that the exact difference is indeterminable from the record and probably is not susceptible of calculation from any statistics now available. It is also believed that the eastern lines have a greater percentage of the most profitable kinds of traffic than the southern carriers and that the northern lines are in a position to handle this traffic at relatively lower costs than the southern lines. While the examiners recommend a finding that the present basis of divisions is unreasonable, they express the belief that the proposed basis will afford the northern lines substantially the same aggregate revenues from citrus traffic which they would receive if the former rates and divisions were still in effect, thereby throwing the burden of the rate reductions resulting from the commission's decision reducing the rates from Florida on to the southern lines.

Successful Excursions

One of the most successful passenger excursions operated in recent months was that of the Chesapeake & Ohio on July 17 from Huntington, W. Va., and intermediate points, to Cincinnati, Ohio, a distance of 161 miles, when 3,044 passengers were carried. The one-day trip was operated at a rate of \$1 for the round trip and the patronage was handled in two trains of 20 coaches each. The attractions at Cincinnati were theatres, a baseball game and an amusement resort. Following the success of this venture, the Chesapeake & Ohio will extend the excursion to a different territory on August 21, when it will operate another from Charleston to Cincinnati, a distance of 212 miles, at a rate of \$1.50.

Another successful low-rate round-trip excursion was operated by the St. Louis-San Francisco on July 31 from various points to Kansas City, Mo., St. Louis, Joplin, Tulsa, Okla., Oklahoma City and Birmingham, Ala., when 1,858 persons were carried. In conducting these excursions, a previous study of traffic possibilities determined the origin and destination of the excursions. The results show a preference for certain cities, but the preference is not common to all territories. An excursion from Memphis to St. Louis drew 61 passengers and one from Tulsa and Oklahoma City to St. Louis, 94 passengers, while one from Springfield, Pacific and intermediate points to St. Louis drew 348 persons. An excursion from Memphis to Kansas City drew 143 persons, while one from Springfield, Paola and intermediate points was patronized by 264. Another from Kansas City and intermediate points to Tulsa and Oklahoma City of 316 persons was bettered by one from Oklahoma City, Sapulpa and intermediate points with 469 persons.

One of the most successful excursions operated in the Chicago territory occurred on August 7, when the Chicago & North Western handled 772 patrons on a \$2.25 mystery trip from Chicago to Lake Geneva, Wis., a distance of 92 miles. The features of the trip were a boat ride and

a chicken dinner. Following the favorable results of this excursion, the Chicago & North Western and the Chicago, Milwaukee, St. Paul & Pacific will place a round-trip rate of \$1 in effect between Chicago and Milwaukee, Wis., 85 miles, on each Sunday beginning August 14. This fare compares with the regular round-trip reduced fare of \$2 and the standard one-way fare of \$3.06. In operating these excursions, the two roads will alternate, one operating from Chicago, while the other operates from Milwaukee so that both do not operate from the same cities on the same day.

Besides the coach excursions which have been so promising, those handled in Pullman cars have also shown pleasing results. On the week end of July 4, twelve Pullman excursions were operated throughout the country, drawing 3,593 passengers. A total of 152 cars were used, making the average load per car 23.6 persons.

The Illinois Central has been particularly successful in attracting business with one-half cent a mile rates. On July 22 it operated a \$5 coach excursion from Chicago to Memphis, 527 miles, with a two-day limit, and carried 1,067 persons on one train. A similar excursion a week later from Memphis to Chicago with a one-day limit drew 500 persons. On June 11, 900 persons took advantage of a \$1 rate from Cairo, Ill., to St. Louis, Mo., 152 miles. Another excursion that was well patronized was operated on July 30, when low rates were placed in effect from New Orleans, La., Jackson, Miss., and Memphis, Tenn., to Chicago and St. Louis, the coach rates to Chicago being \$20, \$15 and \$10, respectively. A total of 363 persons purchased tickets for Chicago and 114 to St. Louis.

P.R.R. to Extend Scope of Commutation Rates

Four new forms of commutation tickets will be available to patrons of the Pennsylvania, beginning August 15, on all of its lines serving the Philadelphia, Pa., suburban territory. At the same time new low rate round trip fares will be established between intermediate stations in the same area.

The new tickets will establish commutation fares between principal intermediate points located on each division within the suburban area as well as between suburban stations and the city of Philadelphia. One of the innovations will be a weekly 12-ride commutation ticket, to be sold at approximately one-fourth the cost of the present 60-trip monthly ticket. It will be good for the calendar week, commencing on Monday and may be purchased any Saturday, Sunday or Monday for the ensuing week. Another departure will be a monthly ticket good for twenty trips within a period of 30 days from date of sale. This ticket will be available at a slightly higher rate per trip than the present 50-trip ticket now sold between Philadelphia and suburban points. It may be purchased at any time. The 50-trip six months' ticket now on sale between Philadelphia and the principal suburban stations will also be placed on sale between

intermediate points on each division within the suburban area.

The new reduced round-trip tickets will be sold for one-third less than double the regular one-way fares. They will be available every day in the week to or from Philadelphia or between any two stations on a suburban line. It will have a return limit of two days in addition to the day of the sale.

Officials of the passenger traffic department explained that the new tickets are being provided not only to meet the present situation as applied to the reduced number of working days, but also as the result of careful studies undertaken to devise means whereby commutation travel could be given a wider appeal, thereby benefiting a larger segment of the public, and at the same time bringing increased revenues to the railroad. It is believed that the broader privileges extended will build up larger train loads, and so make the service more remunerative on the basis of train earnings.

Equipment and Supplies

FREIGHT CARS

THE UNITED STATES NAVY DEPARTMENT has ordered one steel flat car of 30 tons' capacity and 55 ft. long, from the Haffner-Thrall Car Company, Chicago. Inquiry for this equipment was reported in the *Railway Age* of July 9.

IRON & STEEL

THE PENNSYLVANIA has ordered 6,050 tons of steel for work at its Newark, N. J., station, dividing the order as follows: The McClintic-Marshall Corporation, 4,500 tons; the Shoemaker Bridge Company, 800 tons; and the Fort Pitt Bridge Works, 750 tons.

SIGNALING

THE NEW YORK, ONTARIO & WESTERN has placed an order with the Union Switch & Signal Company covering materials for the installation of automatic block signals in connection with track changes at Middletown, N. Y., involving 11 color light signals, 40 relays with instrument case housings, hand-operated switch machines, etc.

UNION PACIFIC.—The Interstate Commerce Commission, on petition of this company, has modified its automatic train control orders in so far as they affect the Union Pacific, to permit operation of locomotives equipped with automatic cab signals in lieu of the automatic train control devices required by the orders between North Platte, Neb., and Cheyenne, Wyo. The company in-

stalled a two-speed continuous automatic train control system and the total expenditures for maintenance and operation for the five years 1927 to 1931 had been \$514,605. It was estimated that the cost of making the proposed change from train control to cab signal equipment for the 137 locomotives now on line would amount to \$27,126, which, in view of the present reduced traffic, would approximately equal the saving in maintenance costs during the first year.

MOTOR TRANSPORT

THE NEW YORK, NEW HAVEN & HARTFORD has accepted delivery of five model A, 31-passenger Twin coaches. The buses will be placed in the service of the Berkshire Street Railway Company, Pittsfield, Mass.

THE MAINE CENTRAL TRANSPORTATION COMPANY, subsidiary of the Maine Central, has purchased one Type W, 25-passenger city service Yellow coach and two Type W, 21-passenger city service Yellow coaches from the General Motors Truck Company, Pontiac, Mich.

MISCELLANEOUS

THE NEW YORK CENTRAL has placed an order with the Westinghouse Electric & Manufacturing Company for five under-feed stokers burning bituminous coal to replace present hand-fired anthracite grates for use at its East 161st street plant, Mott Haven yards, New York City.

Ann Arbor Shopmen Return to Work

The locomotive shops of the Ann Arbor at Owosso, Mich., were re-opened on August 3, giving employment to 120 men.

P. R. R. Recalled 2,000 Furloughed Employees in July

As a result of the co-operative effort of employees and management to secure a wider distribution of employment, over 2,000 furloughed employees of the Pennsylvania were put back to work during the month of July. The employees thus restored to the payrolls are distributed all over the system.

In addition, nearly 1,000 other men have been called back to work on the new improvement projects which are being carried forward under contract. These include the electrification work between New York and Philadelphia, Pa., the extensive change of line at Elkton, Md., the placing of wires in conduits south of Wilmington, Del., track elevation at Chicago, new station and track facilities at Newark, N. J., grade crossing elimination in Norristown, Pa., and the connecting line to reach the new Union station in Cincinnati, Ohio.

The plan of distributing the available work on the Pennsylvania more broadly, in order to reduce unemployment as much as practicable, has been worked out and made effective in a series of conferences with the various classifications of employees.

Supply Trade

The Columbia Steel Corporation, a subsidiary of the United States Steel Corporation, plans to construct a \$400,000 addition to its plant at Torrance, Cal.

E. C. Brandt, assistant works manager of the Westinghouse Electric & Manufacturing Company, has been appointed manager of renewal parts in all Westinghouse plants. He will have full responsibility for manufacture at the Homewood (Pa.) works.

J. W. Speer has been appointed manager of the commercial air-conditioning products department of the Westinghouse Electric & Manufacturing Company, with headquarters in East Pittsburgh, Pa. Mr. Speer will be responsible for the development of all air-conditioning and air-cooling products except those for domestic service.

Manning, Maxwell & Moore, Inc., have acquired the business of the Box Crane & Hoist Corporation, Philadelphia, Pa. The business thus acquired will be merged with that of the Shaw Electric Crane Company, a Manning, Maxwell & Moore subsidiary, in the Shaw plant at Muskegon, Mich., the merged businesses operating as the **Shaw-Box Crane & Hoist Company**. The purchase does not include Philadelphia land and buildings.

H. Birchard Taylor, of Philadelphia, Pa., has been elected president of the Diesel Engine Manufacturers' Association, succeeding **George W. Codrington**, of the Winton Engine Company, Cleveland, Ohio, who was elected chairman of the board. **E. T. Fishwick**, of the Worthington Pump & Machinery Corporation, continues as chairman of the executive committee. The association was organized in 1928 and has since been active in promoting trade standards in the Diesel industry and in gathering Diesel engine statistics.

D. L. Eubank, C. C. Cox and **Tom Turney** have organized the firm of **Eubank, Cox and Turney**, with headquarters at 625 Walton building, Atlanta, Ga., to handle railway-industrial equipment and supplies for **J. R. Johnson & Company, Inc.**, Richmond, Va., the MacLean Fogg Lock Nut Company, Chicago, the MacLeod Company, Cincinnati, Ohio, the Buckeye Products Company, Cincinnati, the Rust-Oleum Paint Corporation, Chicago, and the Wisconsin Abrasive Company, Milwaukee, Wis. Mr. Cox was formerly with the Southern Wheel Company and Mr. Turney has been associated with the Galena Oil Corporation.

The Franklin Railway Oil Corporation, with main office and works at Franklin, Pa., and division offices at New York, Kansas City, Dallas and Los Angeles, will in future handle sales as the railroad department, specializing

only in railroad lubricants, for oil companies operating throughout the United States as follows: Standard Oil Company of New York, New York; White Eagle Oil Corporation, Kansas City, Mo.; Magnolia Petroleum Company, Dallas, Texas; General Petroleum Corporation, Los Angeles, Cal.; Vacuum Oil Company, Inc., New York; White Star Refining Company, Detroit, Mich.; Wadham's Oil Company, Milwaukee, Wis.; and Lubrite Refining Company, St. Louis, Mo.

H. A. Morrison, business manager of Railway Signaling, with headquarters at Chicago, has been appointed western manager in charge of sales in the western territory for the **Simmons-Boardman Publishing Company**, publishers of the *Railway Age* and other transportation magazines, to succeed **J. Mack Rutherford**, deceased. Mr. Morrison obtained his first railroad experience in the traffic department of the Pennsylvania at Indianapolis, Ind., entering the service of this road in 1912. In August, 1915, he left the employ of the Pennsylvania to become a special apprentice in the electrical department of the Chicago, Rock Island & Pacific at Silvis, Ill., and in June, 1918, was transferred to the general mechanical superintendent's office at Chicago. On September 1, 1919, he resigned to become a sales engineer for the United States Light & Heat Corporation, with headquarters in Chicago, which position he held until May 1, 1924, when he was promoted to district manager in charge of railway sales. He resigned from this position on May 1, 1925, to become sales representative of the Simmons-Boardman Publishing Company. On July 1, 1930, he was appointed business manager of Railway Signaling, published by that company.

Construction

CHICAGO GREAT WESTERN.—This company has asked for bids for the remodeling of its roundhouse at Red Wing, Minn., the cost approximating \$14,000. Bids have also been received for the construction of concrete jackets on six bridge abutments between Marshalltown, Iowa, and Kansas City, Mo., the cost approximating \$15,000.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—This company has asked for bids for the conversion of its pumping station at Stockland, Ill., from steam to electric power, the work including the changing of pumps and pipe lines and the installation of electric wiring.

CHICAGO, ROCK ISLAND & PACIFIC.—A contract has been awarded the Strobel Steel Construction Company, Chicago, for the replacing of the floor of a bridge over the Mississippi river at Rock Island, Ill.

NEW YORK CENTRAL.—This company has awarded to the Walsh Construction

Company, Syracuse, N. Y., a contract for the elimination of a grade crossing of its tracks with the Rainbow highway (Butts crossing), located 1.03 miles north of Gabriels station, Brighton, N. Y.; and to the Hecker-Moon Company, Cleveland, Ohio, a contract for the elimination of a grade crossing on State highway No. 5334-A, south of Reading Center station, Reading, N. Y.

PENNSYLVANIA.—A contract has been awarded the E. W. Thurston Construction Company, Detroit, Mich., for the construction of a bridge over Pepper road, Detroit, Mich.

Financial

ASHLEY, DREW & NORTHERN.—*R.F.C. Loan*.—The Interstate Commerce Commission has approved a loan of \$400,000 to this company from the Reconstruction Finance Corporation to liquidate to that extent amounts due the Crossett Lumber Company on open account, amounting to \$648,381, on condition that the remainder of the indebtedness be carried unsecured and without interest during the life of the loan.

ATCHISON, TOPEKA & SANTA FE.—*Control of Subsidiaries*.—The Interstate Commerce Commission has authorized this company to acquire control by lease of the Fresno Interurban and to continue control, under revised leases, of the Carona & Santa Fe and the California Southern.

CAIRO, TRUMAN & SOUTHERN.—*R. F. C. Loan Denied*.—The Interstate Commerce Commission has again denied approval of this company's application for a loan of \$75,000 from the Reconstruction Finance Corporation to discharge indebtedness to the Tschudy Lumber Company, which controls the road, and to the St. Louis Southwestern and the St. Louis-San Francisco. The commission had previously denied a similar application but the company renewed it, offering the guaranty of the lumber company and also offering to create a fund for repayment of the amount by impounding \$5 of the amount received for the transportation of each car of logs shipped over its line by the lumber company.

CANADIAN PACIFIC.—*Omits Common Dividend*.—Directors of this company have omitted action on the common dividend due at this time. In February 31 $\frac{1}{4}$ cents were paid.

CHICAGO RIVER & INDIANA.—*Tentative Recapture Report*.—The Interstate Commerce Commission, Division 1, has issued a tentative recapture report finding that the C. R. & I. system, including the Chicago River & Indiana and the Chicago Junction, had net railway operating income in excess of 6 per cent amounting to \$193,857 for the period from January 1 to May 18, 1922, of which one-half would be recapturable. On May 19 the carriers

became a part of the New York Central system.

CHICAGO, ROCK ISLAND & PACIFIC.—*Bonds*.—The Interstate Commerce Commission has authorized the Rock Island Omaha Terminal to issue \$306,000 of first mortgage bonds to be delivered to the Chicago, Rock Island & Pacific in satisfaction of indebtedness for capital advances.

DENVER, LEADVILLE & ALMA.—*Incorporation*.—Articles of incorporation have been filed for this road which has taken over the Denver-Leadville branch of the Colorado & Southern. The president of the new company is Victor A. Miller, receiver of the Rio Grande Southern, who will operate daily trains over the 185-mile narrow gage line, using gasoline power.

KANSAS CITY, KAW VALLEY & WESTERN.—*R.F.C. Loan Approval Revoked*.—The Interstate Commerce Commission has revoked a certificate it had issued on June 25 to this company approving a loan of \$51,000 from the Reconstruction Finance Corporation, because the applicant was unable to issue \$215,000 of bonds which were required as part of the collateral.

MISSOURI PACIFIC.—*R. F. C. Loan*.—This company has applied for an additional loan of \$3,000,000 from the Reconstruction Finance Corporation to meet fixed charges on September 1.

MISSOURI SOUTHERN.—*R.F.C. Loan*.—The Interstate Commerce Commission has approved a loan of \$99,200 to this company from the Reconstruction Finance Corporation for the purpose of paying bank loans amounting to \$75,555, \$14,420 on a note to the Missouri Pacific, and \$9,225 to cover past-due vouchers. One of the conditions, however, is that the company shall agree that during the life of the loan it will not charge to operating expenses in excess of \$10,000 a year as the total compensation of its officers and employees classified as executives, officials, staff assistants, professional, clerical and general. The company had stated that effective August 1 and throughout the period of the loan it would reduce the compensation of its officers and employees by \$17,082 and eliminate from its rentals \$2,000 for office rent in Chicago.

NELSONVILLE-ATHENS ELECTRIC.—*R. F. C. Loan Denied*.—The Interstate Commerce Commission has denied approval of this company's application for a loan of \$115,000 from the Reconstruction Finance Corporation.

NORFOLK SOUTHERN.—*Protective Committee*.—A protective committee has been formed for the holders of this company's 5 per cent 1961 bonds, the August 1 interest payment being in default. The committee is headed by Carroll M. Shanks of the Prudential Insurance Company, and the Central Hanover Bank & Trust Company, New York, has been designated as depository.

OKLAHOMA & ELKHORN MOUNTAIN.—*R.F.C.*

Loan Again Denied.—The Interstate Commerce Commission upon reconsideration has affirmed its previous decision denying approval of this company's application for a loan of \$33,296 from the Reconstruction Finance Corporation to discharge indebtedness to the Dierks Lumber & Coal Company, which controls the applicant. The commission was unable to find that the loan would be adequately secured.

ST. LOUIS SOUTHWESTERN.—R. F. C. Loan.—This company has filed with the Interstate Commerce Commission and the Reconstruction Finance Corporation a supplemental application for a loan of \$1,704,892 as the unappropriated balance of the loan of \$18,000,000 approved by the commission in April. The company had used less than the full amount approved but now requires additional amounts to meet overdue vouchers, interest on bonds, and interest and principal on equipment trust certificates.

SOUTHERN PACIFIC.—Bonds.—This company has applied to the Interstate Commerce Commission for authority to nominally issue \$5,916,000 of San Francisco Terminal first mortgage bonds, to be pledged as collateral for notes.

TEXAS-MEXICAN.—Tentative Recapture Report.—Division 1 of the Interstate Commerce Commission has issued a tentative recapture report finding \$299,622 of excess income for the years 1924 to 1926, inclusive, accompanied by an order directing the company to pay half that amount to its recapture fund unless a protest is filed by September 19.

WACO, BEAUMONT, TRINITY & SABINE.—R.F.C. Loan.—This company has reduced from \$8,983,285 to \$4,988,362 the amount of its loan application to the Reconstruction Finance Corporation, in a supplemental application, eliminating the \$3,878,362 asked to complete extension of its lines and to repair existing properties, and \$1,110,000 asked to take up an issue of first mortgage bonds.

WESTERN PACIFIC.—Bonds.—This company has applied to the Interstate Commerce Commission for authority to issue \$5,000,000 of general and refunding mortgage bonds to be pledged as collateral for a note to the Reconstruction Finance Corporation.

Average Prices of Stocks and of Bonds

	Last Aug. 9	Last week	Last year
Average price of 20 representative railway stocks..	22.96	16.82	61.58
Average price of 20 representative railway bonds..	59.43	57.10	88.33

Dividends Declared

Canadian Pacific.—Preferred, \$2.00, semi-annually, payable October 1 to holders of record September 1. Common dividend omitted.

Cleveland & Pittsburgh.—Regular Guaranteed, 87½c, quarterly; Special Guaranteed, 50c, quarterly; both payable September 1 to holders of record August 10.

Fort Wayne & Jackson.—Preferred, \$2.75, semi-annually, payable September 1 to holders of record August 20.

Northern Railroad of New Jersey.—4 Per Cent Guaranteed, \$1.00, quarterly, payable September 1 to holders of record August 20.

Troy & Bennington.—\$5.00, semi-annually, payable August 1 to holders of record July 20.

Utica, Clinton & Binghamton. 1½ per cent, semi-annually, payable August 10 to holders of record August 1.

Railway Officers

EXECUTIVE

Paul Sippel, assistant to the executive vice-president of the Louisiana & Arkansas, with headquarters at Pine Bluff, Ark., has been promoted to assistant to the president, with the same headquarters.

Mariano Cabrera, sub-secretary of communications on special duty as representative of the Mexican government in the operation of the Southern Pacific of Mexico, pending settlement of the strike on that railroad, and vice-president and general manager of the National Railways of Mexico from 1926 to 1930, when he resigned and was succeeded by F. P. Landa, has been appointed executive president and general manager of the National Railways, to succeed **Javier Sanchez Mejorada**, resigned. While the appointment and resignation have been approved by the directors at Mexico City, D. F., they must be confirmed by the directors in New York.

At a meeting of the Denver Union Terminal Railway at Denver, Colo., on August 2, **J. H. Aydelott**, general manager of lines west of the Missouri river of the Chicago, Burlington & Quincy, with headquarters at Omaha, Neb., was elected president, and **H. B. Lautz**, assistant general manager of western lines of the Atchison, Topeka & Santa Fe, with headquarters at La Junta, Colo., was elected vice-president. Officers re-elected were: General manager, **John L. Keating**, who has occupied that position since 1914; secretary and auditor, **C. R. Hines**; treasurer, **J. C. Houston**; and chief engineer, **Arthur Ridgeway**, chief engineer of the Denver & Rio Grande Western, with headquarters at Denver, Colo.

TRAFFIC

F. H. Owen has been appointed chief of tariff bureau of the New York Central, Michigan Central, Pittsburgh & Lake Erie, and Cleveland, Cincinnati, Chicago & St. Louis, with headquarters at New York.

Walter F. Smith, traveling freight agent of the Chicago, Indianapolis & Louisville, with headquarters at Cincinnati, Ohio, has been promoted to general agent, with headquarters at Milwaukee, Wis., to succeed **F. W. Robinson**, who died on July 21.

W. O. Lewis, assistant freight traffic manager of the Gulf, Mobile & Northern, with headquarters at New Orleans, La., has been appointed assistant general freight agent, with the same headquarters, and **R. P. Tallman**, assistant to the freight traffic manager, with head-

quarters at Mobile, Ala., has been appointed assistant general freight agent, with the same headquarters. **L. L. Lapp**, division freight agent, with headquarters at Jackson, Miss., has been promoted to district freight agent, with headquarters at Chicago, and **F. M. Sublette**, commercial agent, with headquarters at Mobile, has been promoted to district freight agent at Jackson.

William H. Suffield, general agent of the Illinois Central, with headquarters at Detroit, Mich., has been promoted to assistant freight traffic manager, with headquarters at Chicago, to succeed **William Haywood**, who has been promoted to freight traffic manager. Mr. Suffield was born in Montreal, Que., and entered railway service on June 16, 1891,



William H. Suffield

as a messenger in the office of the auditor of freight receipts of the Illinois Central at Chicago. On September 18, 1910, he was appointed quotation clerk in the general freight office, where he later became chief tariff clerk. On March 1, 1920, he was appointed commercial agent at Detroit, Mich., which position he held until June 1, 1926, when he was promoted to general agent.

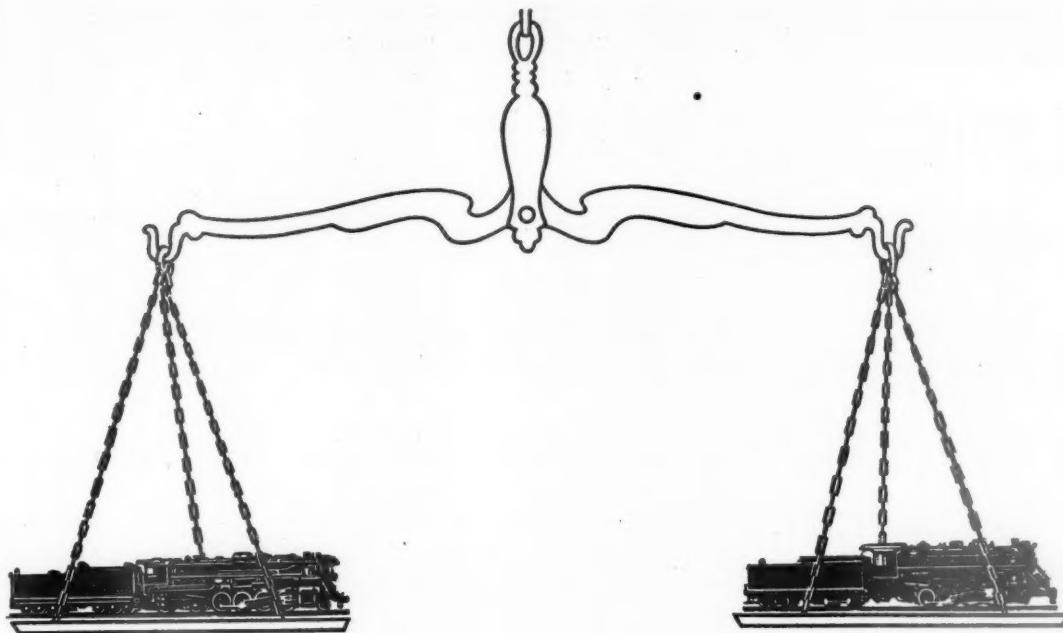
MECHANICAL

C. W. Frey, master car builder of the Michigan Central, with headquarters at Detroit, Mich., has been appointed general foreman, with the same headquarters, to succeed **J. S. Wilson**, who has been assigned to other duties, the position of master car builder having been abolished.

OBITUARY

David Hughes, trainmaster for the New York Central, with headquarters at Grand Central Terminal, New York, died on August 2, after a lingering illness, at his home in Larchmont, N. Y.

William T. Small, superintendent of motive power of the Northwestern Pacific, with headquarters at Tiburon, Cal., died on July 31 following a heart attack. He was appointed to this position in 1922.



BALANCE

modern road engines with modern switchers

SWIFT movement of freight, in the yards as well as on the road, is the key to modern railroading. « An old Consolidation, obsolete for the road, will never become a modern switching locomotive—no matter how much money you sink in its conversion. « Supplement your modern road power with modern yard power.



LIMA LOCOMOTIVE WORKS • Incorporated • LIMA • OHIO

Revenues and Expenses of Railways

MONTH OF JUNE AND SIX MONTHS OF CALENDAR YEAR 1932

Name of road	Av. mileage operated during period.			Operating revenues—			Operating expenses—			Net from railway operation.			Net operating income, 1931.	
	Freight.	Passenger. (inc. misc.)	Total	Way and structures.	Maintenance of equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Operating income (or loss).	Net operating income.	Net operating income, 1931.	
Akron, Canton & Youngstown..... June 171 \$17,442 \$56 \$13,805 \$9,408 \$9,943 \$89,426 \$58.0 \$17,142 \$52,336 \$20,099														
6 mos. 171 780,156 322 847,228 60,803 247,459 65,903 549,174 66.6 275,554 202,617 141,837														
Alton June 1,017 835,584 1,127,082 1,173,335 70,250 47,449 45,106 89,555 79.5 230,337 121,229 -30,89														
6 mos. 1,017 5,202,833 7,140,943 833,998 40,959 3,033,053 310,970 5,670,138 79.4 1,470,505 814,902 -14,833 237,633														
Alton & Southern..... June 31 6 mos. 31 1,043,757 46,264 1,059,484 135,563 1,292,857 50,516 438,168 79,104 996,083 85.9 163,401 64,803 -29,290														
June 9,225 6,769,480 3,151,714 8,346,661 1,146,405 2,30,801 327,405 3,005,816 405,916 7,182,752 81.2 1,663,919 234,999 -349,170														
6 mos. 9,724 40,808,352 7,349,925 53,066,997 6,477,107 14,190,473 2,150,876 18,877,967 2,388,150 44,051,324 83.0 9,015,673 3,349,417 3,835,588 8,568,772														
Gulf, Colorado & Santa Fe..... June 93 6,955 1,191,393 294,106 6,092,481 909,524 1,194,669 32,053 165,050 30,374 308,301 6,092,639 88.0 166,529 117,853 101,550 22,976														
Panhandle & Santa Fe..... June 1,878 544,020 30,577 623,481 137,187 164,625 18,728 19,862 35,869 554,250 88.9 69,231 22,281 -61,453 1,727,323														
Atlanta & West Point..... June 93 63,697 20,097 659,701 109,743 141,849 50,562 314,139 57,514 692,330 105.0 118.5 -17,463 -28,034 -23,198 -3,986														
Western of Alabama..... June 133 61,664 20,571 94,325 20,453 27,188 7,750 42,226 8,152 111,738 118.5 -17,463 -28,034 -23,198 -3,986														
Atlanta, Birmingham & Coast..... June 639 1,114,610 33,201 1,301,403 322,237 370,173 133,688 608,311 1,050,026 1,591,016 122.2 -28,924 234,999 -382,106 -460,425 -527,022														
6 mos. 639 2,256,396 230,637 2,266,292 3,206,308 4,655,314 801,242 8,354,973 898,196 18,703,388 99.2 18,703,388 2,137,351 3,10,026														
6 mos. 639 5,144 17,281,064 3,223,915 5,648,430 115,643 181,099 51,432 30,992 56,589 723,024 111.5 -74,594 -138,119 -10,841 58,233														
Atlanta, Atlantic Coast Line..... June 639 1,114,610 33,201 1,301,403 322,237 370,173 133,688 608,311 1,050,026 1,591,016 122.2 -28,924 234,999 -382,106 -460,425 -527,022														
6 mos. 639 5,144 17,281,064 3,223,915 5,648,430 115,643 181,099 51,432 30,992 56,589 723,024 111.5 -74,594 -138,119 -10,841 58,233														
Charleston & Western Carolina..... June 342 124,566 1,008 128,822 28,024 25,704 6,408 47,323 5,050 112,509 97.3 163,313 -687 3,042 73,720														
Baltimore & Ohio..... June 85 442,753 1,054,450 146,924 146,924 1,194,868 38,665 34,214 718,875 79.4 166,578 86,532 250,998														
6 mos. 85 442,753 1,054,450 146,924 146,924 1,194,868 38,665 34,214 718,875 79.4 166,578 86,532 250,998														
Staten Island Rapid Transit..... June 5,397 54,787,788 5,633,756 5,911,537 12,460,791 2,684,819 3,206,008 4,655,314 801,242 8,354,973 898,196 18,703,388 2,137,351 3,10,026														
Bangor & Aroostook..... June 619 367,909 13,246 401,916 53,976 57,7840 27,668 148,358 2,117,972 52.7 188,961 559,616 257,669 474,594 729,964														
Baltimore & Ohio Chic. Term..... June 85 253,375 26,016 1,055,450 144,693 233,832 11,914 88,912 1,433,616 86.2 20,834 4,202 78,805 74,362														
6 mos. 85 253,375 26,016 1,055,450 144,693 233,832 11,914 88,912 1,433,616 86.2 20,834 4,202 78,805 74,362														
Baltimore & Ohio Ry. Co. of Chicago..... June 53 285,733 571,104 902,704 44,243 12,460,791 2,684,819 3,206,008 4,655,314 801,242 8,354,973 898,196 18,703,388 2,137,351 3,10,026														
Bessemer & Lake Erie..... June 226 325,626 755 332,355 57,7840 27,668 148,358 2,117,972 52.7 188,961 559,616 257,669 474,594 729,964														
Boston & Maine..... June 226 1,565,622 8,120 1,613,733 292,649 980,013 70,439 146,151 713,743 79.1 188,961 559,616 257,669 474,594 729,964														
6 mos. 226 1,565,622 8,120 1,613,733 292,649 980,013 70,439 146,151 713,743 79.1 188,961 559,616 257,669 474,594 729,964														
Brooklyn Eastern Dist. Term..... June 11 69,682 41,900 10,880 174 21,702 6,213 43,159 61.4 27,184 19,991 37,697														
Burlington-Rock Island..... June 11 431,829 19,312 62,899 18,133 29,264 937 138,886 2,240,353 138.8 181,417 140,550 224,978														
6 mos. 11 57,113 1,168 492,891 105,292 58,965 28,400 3,532 7,887 7,377 117.1 14,391 21,012 224,978														
Cambria & Indiana..... June 37 76,052 545,834 120,539 106,439 2,322,265 2,535 340 10,087 14,341 71,955 94.18 3,807 41,551 69,694														
Canadian Pac. Lines in Maine..... June 37 545,834 120,539 106,439 2,322,265 2,535 340 10,087 14,341 71,955 94.18 3,807 41,551 69,694														
6 mos. 37 545,834 120,539 106,439 2,322,265 2,535 340 10,087 14,341 71,955 94.18 3,807 41,551 69,694														
Canadian Pac. Lines in Vermont..... June 37 545,834 120,539 106,439 2,322,265 2,535 340 10,087 14,341 71,955 94.18 3,807 41,551 69,694														
6 mos. 37 545,834 120,539 106,439 2,322,265 2,535 340 10,087 14,341 71,955 94.18 3,807 41,551 69,694														
Central New Jersey..... June 692 1,591,834 437,154 2,198,477 213,019 425,958 61,230 981,222 1,789,952 81.4 408,525 7,359 1,937,717 17,744														
6 mos. 692 11,804,201 2,655,662 15,456,335 1,273,180 2,991,222 317,220 6,424,997 591,449 630,435 75.7 3,722,646 1,904,029 27,946														
Central Vermont..... June 457 3,368,933 46,264 669,260 74,394 124,941 16,514 182,711 20,94 49,413 32,052 32,052 19,778 1,58,288														
6 mos. 457 2,125,613 267,374 630,851 6,119,463 783,921 1,168,342 332,950 5,507,950 430,864 2,486,302 92.54 200,489 95,407 1,047,059														
Chesapeake & Ohio..... June 3,144 6,418,102 247,045 6,998,665 1,308,453 1,771,459 2,421,905 61.0 2,726,760 1,937,717 17,744														
6 mos. 3,144 42,872,789 1,407,660 46,192,352 4,807,722 8,177,395 1,862,347 27,702,015 13,687,316 1,59,301 1,311,748														
Chicago & Eastern Illinois..... June 938 3,642,833 847,020 873,420 1,29,601 1,58,693 58,407 4,128,663 57,967,020 61,702 48,906 1,302,236 1,311,748														
6 mos. 938 582,533 6,089,107 793,155 1,217,469 367,519 2,810,210 356,000 5,590,833 91.8 498,274 164,964 913,101 294,055														

Continued on Next Left Hand Page

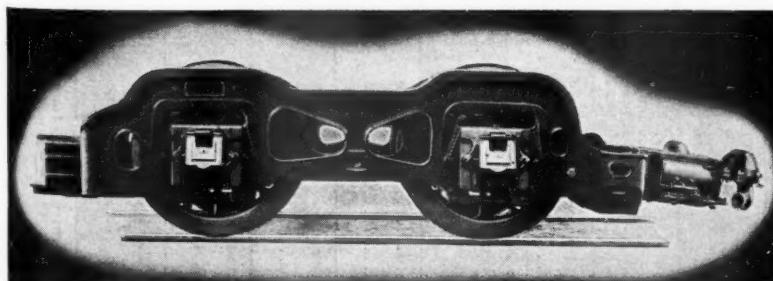
**COMFORT
... SPEED...
ON-TIME RUNS**
of the
TWENTIETH CENTURY LIMITED
require

BOOSTER POWER

Nothing has been left undone in giving the "Twentieth Century Limited" every luxury and every mechanical facility to promote comfort and speed. Among the important factors in obtaining these essentials is The Locomotive Booster.

There is no jerking, no taking of slack as the "Century" pulls out of a station. The start is almost imperceptible. Smoothly, yet rapidly, the train accelerates until the engineer shuts-off the Booster, turning the work over entirely to the main engine.

For those traveling on this famous train the Booster promotes riding comfort. It helps maintain the fast operating schedule. Even though the "Century" encounters few grades, the Booster pays its way in good-will, in on-time runs and in the economical locomotive operation it makes possible.



THE LOCOMOTIVE BOOSTER

11

**NEW YORK CENTRAL
LIMITEDS
USE THE BOOSTER**

Twentieth Century Limited
Advance Century
Commodore Vanderbilt
The Wolverine
The Detroiter
The North Shore Limited
The Cleveland Limited
Empire State Express
Lake Shore Limited
Southwestern Limited
Ohio State Limited

FRANKLIN RAILWAY SUPPLY CO., INC.

NEW YORK

CHICAGO

MONTREAL

August 13, 1932

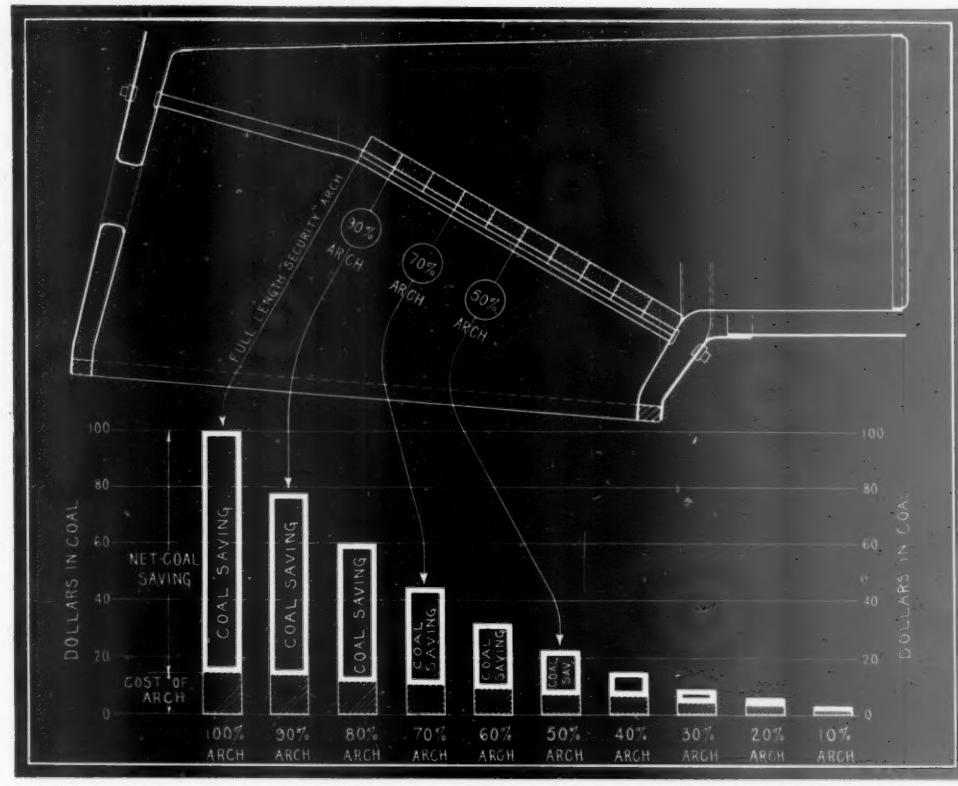
Revenues and Expenses of Railways

MONTH OF JUNE AND SIX MONTHS OF CALENDAR YEAR 1932—CONTINUED

Name of road	Av. mileage operated during period.	Operating revenues			Operating expenses			Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.					
		Freight.	Passenger. (inc. misc.)	Total	Maintenance of Way and Equipment, structures.	Traffic. Transportation.	General.									
Chicago & Illinois Midland	June 131	\$25,671	\$1,095	\$62,602	\$16,285	\$38,205	\$115,082	183.8	-\$52,480	-\$61,232	\$13,386					
Chicago & North Western	June 142	1,055,917	9,336	1,075,224	12,266	324,941	101,037	837,724	79.7	217,795	165,454	112,124				
Chicago, Burlington & Quincy	June 142	1,044,296	5,853,137	5,935,433	1,032,317	175,126	2,396,554	279,627	5,220,269	90.0	582,868	121,909	112,124			
Chicago, Indianapolis & Louisville	June 144	3,167,426	3,784,415	6,951,943	4,562,551	5,967,514	8,662,290	1,016,061	29,101,129	74.5	1,341,560	798,952	1,325,742			
Chicago, Rock Island & Pacific	June 144	5,217,020	5,637,781	10,854,802	4,203,298	5,921	4,525,049	14,828,745	29,731,195	74.5	10,182,888	4,450,491	10,216,112			
Chic., Mil., St. Paul & Pacific	June 144	3,095,672	3,095,672	6,191,344	1,044,296	1,044,296	1,045,490	1,420,844	375,370	3,086,847	344,302	17,187	186,600			
Chicago River & Indiana	June 20	3,173,079	3,611,054	6,784,133	4,022,511	4,181,941	114,000	166,000	1,80,346	164,986	3,457,012	85.9	1,456,432			
Clinchfield R. R.	June 20	4,118,183	544,264	4,662,447	552,042	557,229	517,388	1,073,038	20,022	2,185,577	27,668	565,724	223,202	335,085		
Colorado & Southern	June 20	7,620	26,857,438	35,323,080	33,955,115	3,013,935	6,807,213	1,23,989	14,287,597	1,752,333	36,892,362	90.1	4,041,988	1,280,793	1,231,692	
Columbus & Greenville	June 694	22,208	335,090	235,157	162,151	206,357	206,763	107,042	120,553	125,863	67.4	109,227	549,866	245,591		
Ft. Worth & Denver City	June 694	1,899,749	1,946,903	3,846,648	1,209,111	1,209,111	216,490	35,964	537,285	6,628	1,098,742	90.9	31,000	104,882	5,731,424	
Conemaugh & Black Lick	June 20	8,864	20,568	37,144	414,238	42,640	78,708	16,907	157,780	35,213	280,664	67.8	133,574	27,449	220,700	
Delaware, Lack. & Hudson	June 854	84,927	1,418,548	98,734	1,679,096	1,901,012	258,017	50,974	82,301	16,480	1,380,909	221,187	36,830	183,169	1,396,929	
Denver, Lack. & Western	June 854	10,302,530	20,504,96	23,070,444	2,401,484	2,412,728	112,333	101,289	164,719	32,996	1,431,691	61.4	1,060,281	856,293	1,303,900	
Denver & Rio Grande Western	June 854	167	329,381	3,337	57,223	431,809	713,882	79,002	1,068,078	200,890	2,436,796	91.6	6,446,983	3,372,682	1,387,862	
Detroit & Toledo Shore Line	June 50	113,704	4,724	103,540	24,438	24,601	840,149	131,095	1,567,960	3,127,506	89.5	101,185	128,285	18,236	121,199	
Detroit Terminal	June 19	1,222,084	40,100	831,274	2,359	2,460,568	673,040	73,957	10,932	148,750	206,632	86,970	290,710	30,701	201,896	
Detroit, Toledo & Ironton	June 19	56,497	18,008	320,495	1,218,083	1,218,083	186,051	3,252,447	10,932	2,057,324	23,386	1,505	4,435	7,03	25,408	
Detroit, Toledo & Ironton	June 563	392,009	8,943	498,275	74,812	75,566,038	980,432	2,074,352	285,401	2,71,021	493,020	1,643	14,282	4,057	92,790	
Duluth, Missabe & Northern	June 563	6,119	1,233,216	1,233,216	1,233,216	1,233,216	1,233,216	1,233,216	1,233,216	1,233,216	1,233,216	1,233,216	1,233,216	1,233,216	1,233,216	
Duluth, Winnipeg & Pacific	June 178	63,741	4,245	71,801	33,423	19,615	16,254	1,233,216	1,233,216	1,233,216	1,233,216	1,233,216	1,233,216	1,233,216	1,233,216	
Elgin, Joliet & Eastern	June 447	4,35,103	1,411	10,304	2,359	2,359	2,359	1,233,216	1,233,216	1,233,216	1,233,216	1,233,216	1,233,216	1,233,216	1,233,216	
Erie Railroad	June 2046	2,046	26,565,005	3,044,042	32,615,274	5,102,237	708,324	1,108,529	1,915,189	248,091	4,142,876	81.2	959,361	566,258	442,094	792,929
Chicago & Erie	June 269	599,665	28,304	1,045,833	1,045,833	1,045,833	1,045,833	1,045,833	1,045,833	1,045,833	1,045,833	1,045,833	1,045,833	1,045,833	1,045,833	1,045,833

Continued on Next Left Hand Page

**THERE'S MORE TO SECURITY
ARCHES THAN JUST BRICK**



THE EFFECT OF ABBREVIATED ARCHES ON FUEL SAVING

SAVE A DIME and LOSE A DOLLAR

A full length Security Sectional Arch is essential to maximum fuel economy in these days of intensive operation and stoker firing.

Cutting out the last course of brick may save specifying a few brick but their absence is quickly reflected in fuel performance.

Each dime thus "saved" in Arch brick means wasting a dollar of fuel.

For over 20 years the fuel economy of the Security Sectional Arch has been proved repeatedly. You need its full benefits more today than ever before.

**HARBISON-WALKER
REFRACTORIES CO.**
Refractory Specialists



**AMERICAN ARCH CO.
INCORPORATED**
Locomotive Combustion
Specialists > > >

Revenues and Expenses of Railways

MONTH OF JUNE AND SIX MONTHS OF CALENDAR YEAR 1932—CONTINUED

Continued on Next Left Hand Page



300 H. P.
Total Weight
114,000 lb.
Tractive Power Starting
34,200 lb.

The Alco Diesel Locomotives now in service are proving themselves to be an exceedingly attractive investment.

Their remarkable performance is in no small way due to the fact that they are working in the service for which they were particularly designed.

Like every highly developed piece of apparatus, the Alco Diesel Locomotive is definitely suited to certain special service, and therefore should only be selected after a careful study of the service conditions.

We are equipped and only too anxious to make this study for you.

And let us emphasize this point — we welcome a request for this analysis — no obligations whatsoever are tied to it.

American Locomotive Company
30 Church Street New York N.Y.



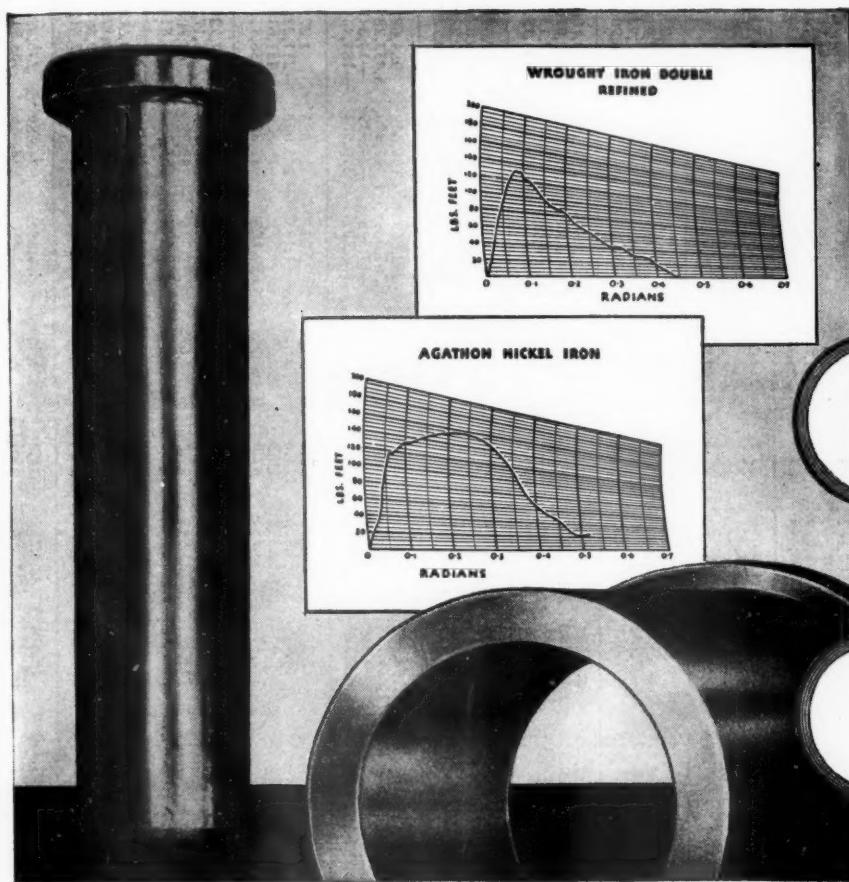
600 H. P.
Total Weight
202,000 lb.
Tractive Power Starting
60,600 lb.

Revenues and Expenses of Railways

MONTH OF JUNE AND SIX MONTHS OF CALENDAR YEAR 1932—CONTINUED

Name of road	Av. mileage operated during period.		Operating revenues		Operating expenses				Operating ratio.	Net from railway operation.	Operating income (or loss).	Net rev. operating income.				
	Freight.	Pasenger. (inc. misc.)	Maintenance of Way and Equipment structures.	Traffic.	Trans- portation.	General.	Total.									
Maine Central	June 1,121	\$79,5405	\$129,638	\$1,039,723	\$164,093	\$145,770	\$14,851	\$359,491	\$40,138	\$726,353	69.9	\$313,370				
Midland Valley	June 363	4,121	652,409	6,072,721	97,041	98,756	98,348	2,375,980	260,201	4,697,274	77.3	1,375,447				
Minneapolis & St. Louis	June 6 mos.	6 mos.	111,112	541	114,732	12,322	5,586	27,668	7,429	70,966	61.9	43,759				
Minneapolis, St. Paul & S. S. Marie	June 6 mos.	4,349	8,818,776	8,818,776	738,610	4,327	1,569,254	2,644,437	411,802	4,954,610	62.3	288,786				
Duluth, South Shore & Atlantic	June 6 mos.	560	1,627	3,297,107	136,39	583,709	137,586	133,708	29,765	308,672	651,603	111.6				
Spokane International	June 6 mos.	163	523,812	11,869	162,503	50,986	6,447	204,462	40,359	52,937	102.4	-67,894				
Mississippi Central	June 6 mos.	150	41,223	1,396	296,601	6,196	8,283	75,622	47,740	34,243	100.2	-113,067				
Missouri-Kansas-Texas Lines	June 6 mos.	364	150	276,713	2,684	44,357	5,867	4,933	20,983	135,377	116.9	-359,875				
Missouri Pacific	June 6 mos.	364	1,819,337	1,819,337	304,024	412,212	69,838	761,811	106,512	1,265,373	91.5	153,964				
International-Great Northern	June 6 mos.	364	1,806,471	1,806,471	263,200	1,537	5,850	7,461	654,548	10,264,694	191,555	-874,876				
Nashville, Chattanooga & St. Louis	June 6 mos.	1,239	7,436	2,852,954	3,003	439,952	71,853	17,030	12,162	112,251	112.1	-102,292				
Monongahela	June 6 mos.	177	1,203	2,856,739	34,730,61	67,462	78,471	77,552	20,480	51,766	112.3	-5,447				
New Orleans Terminal	June 6 mos.	165	165	2,852,779	4,621,676	61,255	2,233,306	297,344	109,616	66,261	10,287,857	104.9	-21,124			
Mobile & Ohio	June 6 mos.	316	1,146,326	1,146,326	13,244,832	1,649,208	2,019,410	98,708	71,547	188,284	48,163	-35,863				
Montour	June 6 mos.	57	1,159	634,992	73,662	106,977	139,895	26,695	12,513	34,243	10.9	-35,863				
Monongahela Connecting	June 6 mos.	177	1,211	3,635,259	385,198	5,352,868	658,092	1,062,253	204,695	2,074,913	261,797	80.1				
Monongahela	June 6 mos.	165	1,203	3,456,739	34,730,61	6,415,234	1,435,666	147,159	34,571	357,920	82.6	-12,485				
New York Central	June 6 mos.	165	1,030	4,392,647	249,255	61,255	2,233,306	297,344	109,616	66,261	10,287,857	104.9	-21,124			
Newburgh & South Shore	June 6 mos.	264	6 mos.	109,638	1,883,669	6,860	1,901,492	192,369	191,516	7,800	1,229,937	116.9	-35,863			
New Orleans Great Northern	June 6 mos.	264	6 mos.	109,638	1,883,669	6,860	1,901,492	192,369	191,516	7,800	1,229,937	116.9	-35,863			
Indiana Harbor Belt	June 6 mos.	11,495	11,495	14,366,939	5,286,304	23,081,510	2,476,335	687,548	6,164	4,579	1,154,524	19,007,882	45.1			
New York Central	June 6 mos.	11,495	99,353,362	32,250,362	153,151,842	16,098,338	3,629,660	3,754,357	59,107,375	6,984,751	121,932,217	79.5	-1,472,618			
Pittsburgh & Lake Erie	June 6 mos.	235	5,066,591	377,646	6,276,147	539,016	2,149,802	167,758	2,522,280	388,052	5,777,205	92.1	-4,073,618			
New Orleans Terminal	June 6 mos.	264	6 mos.	11,517	14,366,939	5,286,304	23,081,510	2,476,335	687,548	6,164	4,579	1,154,524	19,007,882	45.1		
New York Central	June 6 mos.	11,495	11,495	14,366,939	5,286,304	23,081,510	2,476,335	687,548	6,164	4,579	1,154,524	19,007,882	45.1			
Indiana Harbor Belt	June 6 mos.	119	119	1,215,297	90,360	2,317,276	394,570	3,709,707	382,000	50,000	25,944	1,514,132	128,216	1,183,242		
Pittsburgh & Lake Erie	June 6 mos.	235	815,018	48,51	12,133,390	15,123,390	2,089,798	2,692,224	544,261	25,351	7,475	58,800	883,388	98.4		
New York, Chicago & St. Louis	June 6 mos.	1,698	1,698	14,123,393	49,024	1,018,500	5,941,866	78,4652	94,259	5,949,347	5,946,010	512,173	4,867,777	27,829,011	69.9	
N. Y., New Haven & Hartford	June 6 mos.	2,082	2,082	13,131,917	2,018,500	13,177,529	13,177,529	39,806,262	4,867,777	5,946,010	1,413,254	1,505,553	1,413,254	9,301,234	6,387,706	9,729,007

Continued on Next Left Hand Page



HARD!

to resist wear

TOUGH!

to resist shock

AGATHON NICKEL IRON .. combines the qualities that are needed for pins and bushings

Pins, bushings and similar wearing parts need a hard case to withstand wear and reduce repair work. « Then a second element—shock resistance must also be included. « Agathon Nickel Iron has the unique property of taking a fine case and then backs up this case with a tough core to take the shocks that would shatter the usual materials. « How well Agathon Nickel Iron backs up a hard case with a tough core is shown by the above charts. « The Humphrey Machine which produced these charts, bends the full section to the breaking point of the case and then on to final rupture. The first break in the line indicates the point at which the case was first cracked; the rest of the curve shows the resistance of the core to rupture. « The core of the wrought iron shows rapidly diminishing resistance as the angle of bending increases. « Agathon Nickel Iron, on the other hand, shows stubborn resistance even after the case is broken. The core is tougher and uniform in composition. « Use Agathon Nickel Iron for all case-hardened parts.

Toncan Iron Boiler Tubes, Pipe, Plates, Culverts, Rivets, Staybolts, Tender Plates and Firebox Sheets • Sheets and Strip for special railroad purposes • Agathon Alloy Steels for Locomotive Parts • Agathon Engine Bolt Steel • Nitralloy • Agathon Iron for pins and bushings • Agathon

Staybolt Iron • Climax Steel Staybolts • Upson Bolts and Nuts • Track Material, Maney Guard Rail Assemblies • Enduro Stainless Steel for dining car equipment, for refrigeration cars and for firebox sheets • Agathon Nickel Forging Steel (20-27 Carbon)



C E N T R A L A L L O Y D I V I S I O N

REPUBLIC STEEL CORPORATION
MASSILLION OHIO



Revenue and Expenses of Railways

MONTHS OF CALENDAR YEAR 1932—CONTINUED

Continued on Next Left Hand Page

More Power Less Fuel



LOSS of power and waste of fuel are the penalties which must be expected with the use of ordinary wearing parts inside the valve chambers of modern power.

The requirements of today are exceptionally severe but the problems of increased frictional wear and high superheat temperatures can be easily solved with the use of HUNT-SPILLER *Air Furnace GUN IRON* wearing parts.

Make sure that the Bushings, Bull Rings and Packing Rings in the cylinders as well as the valves, are made from this wear-resisting material. The savings in fuel and maintenance insure bigger earnings from every locomotive.



HUNT-SPILLER MFG. CORPORATION
J.G. Platt, Pres. & Gen. Mgr. V.W. Ellet, Vice-President

Office & Works
383 Dorchester Ave. South Boston, 27, Mass.
Canadian Representative: Joseph Robb & Co., Ltd., 997 Aqueduct St., Montreal, P. Q.
Export Agent for Latin America:
International Rwy. Supply Co., 30 Church Street, New York, N. Y.

HUNT-SPILLER GUN IRON

Air Furnace

Revenues and Expenses of Railways

MONTH OR JUNK AND SIX MONTHS OF CALENDAR YEAR 1932—CONTINUED

Av. mileage operated during period.											Operating revenues-Total						Net from railway operation.		
Name of road	Freight.	Pasenger.	(inc. misc.)	Way and structures.	Maintenance of equipment.	Traffic.	Trans- portation.	General.	Total.	Operating ratio.	Operating income (or loss).	Net revenue operating income.							
Georgia Southern & Florida	\$121,164	\$14,979	\$151,103	\$44,252	\$43,252	\$2,394	\$52,346	\$133,534	\$17,569	\$632	\$4,555	\$8,930	\$8,930	\$8,930	\$8,930	\$8,930			
New Orleans & North Eastern	397	154,119	1,037,443	216,301	216,301	12,399	372,539	14,120	913,394	87.9	126,048	20,981	45,240	123,906	123,906	123,906			
Northern Alabama	204	112,204	21,861	148,727	29,670	45,908	63,203	10,268	157,902	105.6	-8,279	-39,500	-50,995	-36,342	-36,342	-36,342			
Southern Pacific	9,105	39,009,686	1,645,349	9,622,240	875,904	1,584,662	293,762	3,300,628	154,069	6,285,678	70.2	2,886,562	1,769,870	1,212,282	-40,836	-40,836	-40,836		
So. Pacific Steamship Lines	6 mos.	6 mos.	6 mos.	130,558	1,057,028	203,124	295,194	40,195	422,335	67,711	1,045,095	98.9	11,933	-174,353	-240,474	-237,654	-237,654		
Texas & New Orleans	554	1,865,238	2,122,835	1,271,170	2,669,168	397,603	515,723	126,334	960,798	226,695	2,390,004	83.3	450,164	175,553	447,639	636,396	636,396		
Tem. R. R. Assn. of St. L.	55	1,421,270	1,94,936	1,223,742	10,527,288	1,080,776	1,953,752	40,715	364,340	1,377,795	1,377,562	88.4	1,884,530	229,699	-973,914	-973,914	-973,914		
Texas-Mexican	162	352,272	4,117	390,020	60,199	66,482	30,239	194,415	237,796	146,327	187,888	117,871	127.4	103,250	104,241	104,241	104,241		
Toledo, Peoria & Western	239	116,067	293	664,560	146,084	146,084	59,782	54,865	224,956	121	60,060	566,757	85.3	66,537	11,291,710	4,694,848	2,260,625		
Toledo Terminal	28	402,159	492	590,668	10,072	12,997	3,027	11,616	49,670	7,414	59,153	108.2	130,764	43,731	107,746	172,562	172,562		
Union R. R. of Penna.	45	160,811	29	118,248	26,819	11,385	18,661	24,625	84,953	18,671	40,664	311,522	79.9	73,903	14,092	625,075	625,075		
Union Pacific	3,768	613,604	5,044,691	491,858	1,019,075	73,542	3,096	184,569	28,262	328,456	81.7	73,703	47,78	40,136	-53,963	-53,963			
Oregon Short Line	2,506	1,017,372	3,135,577	30,642,897	24,148,897	6,244,914	84,953	121	49,672	10,759	1,216,995	66.9	600,816	482,414	347,927	16,462	16,462		
St. Joseph & Grand Island	2,506	1,099,372	1,382,331	185,760	215,888	127,580	160,039	160,039	44,483	492,753	100,582	1,001,618	17,933	2,846,380	2,159,727	1,347,061	1,005,550		
St. Joseph & Salt Lake	1,249	551,459	9,616,863	1,179,737	1,450,538	1,125,820	3,363,634	2,537,795	261,766	3,400,090	653,921	7,126,923	74.1	2,489,940	961,536	490,332	307,818		
Oregon-Wash. R. R. & Nav. Co.	2,338	745,994	119,551	1,032,535	156,442	154,481	151,945	1,522,363	290,930	3,562,306	70.6	1,482,385	53,038	925,726	757,053	822,140			
Los Angeles & Salt Lake	6 mos.	5,101,203	670,598	5,030,040	5,030,040	992,273	358,533	3,013,579	604,262	21,855,973	71.5	8,746,426	5,639,976	4,607,938	6,032,781	6,032,781			
Utah	258	1,018,837	19,016	1,091,422	1,010,378	2,148,897	1,227,580	1,227,580	160,039	319,060	65,322	823,280	61.2	522,988	4,362,637	5,375,192	9,229		
Wabash	111	38,856	551,154	38,905	1,017,709	1,017,709	1,237,511	1,237,511	1,237,511	1,237,511	1,237,511	1,237,511	107,552	768,519	713,759	355,343	355,343		
St. Joseph & Grand Island	258	1,38,837	2,421	149,979	31,510	21,280	2,365	156,442	154,481	97,058	127,656	85.1	22,323	13,522	14,136	121,108			
Wabash	111	548,943	551,154	551,154	551,154	551,154	1,233,339	1,233,339	1,233,339	1,233,339	1,233,339	1,233,339	107,552	251,188	155,533	127,167			
Virginian	6 mos.	608	778,701	5,234	823,379	97,152	173,351	156,621	189,974	28,318	500,973	60.8	2,322,406	202,405	244,947	418,165			
Ann Arbor	2,523	1,216,285	42,693	6,375,115	647,115	1,225,812	1,225,812	15,241	1,324,359	172,530	4,423	3,490,314	54,7	2,882,491	1,622,097	-521,616			
Western Maryland	6 mos.	16,536,305	1,336,154	1,336,154	1,336,154	1,336,154	1,336,154	1,336,154	1,336,154	1,336,154	1,336,154	1,336,154	107,552	1,024,406	1,024,406	2,806,198			
Western Pacific	1,163	597,695	40,668	689,587	138,063	167,917	63,118	306,077	235,022	725,506	105.2	13,187	2,380	-13,505	-31,223	-23,400			
Wheeling & Lake Erie	511	4,144,442	207,117	4,642,260	687,719	1,045,171	366,227	2,201,916	1,218,742	4,426,652	100.4	1,411,392	86.5	1,024,406	1,024,406	1,024,406			
Western Maryland	511	548,143	1,700	585,480	68,985	165,710	29,211	204,41	29,745	85.1	84,328	85.1	1,024,406	1,024,406	1,024,406	1,024,406			
Western Pacific	1,163	4,144,442	207,117	4,642,260	687,719	1,045,171	366,227	2,201,916	1,218,742	4,426,652	100.4	1,411,392	86.5	1,024,406	1,024,406	1,024,406			
Western Pacific	511	548,143	1,700	585,480	68,985	165,710	29,211	204,41	29,745	85.1	84,328	85.1	1,024,406	1,024,406	1,024,406	1,024,406			
Western Pacific	511	754,838	2,348	3,892,348	514,914	1,083,767	186,659	1,376,717	1,376,717	1,376,717	1,376,717	1,376,717	556,751	556,751	556,751	556,751			
Western Pacific	293	5,858,252	41,735	6,271,749	865,742	1,159,373	245,026	1,703,263	245,026	1,703,263	1,703,263	1,703,263	66.7	2,086,609	1,666,609	1,666,609	1,666,609		
Western Pacific	293	5,858,252	41,735	6,271,749	865,742	1,159,373	245,026	1,703,263	245,026	1,703,263	1,703,263	1,703,263	66.7	2,086,609	1,666,609	1,666,609	1,666,609		
Western Pacific	293	5,858,252	41,735	6,271,749	865,742	1,159,373	245,026	1,703,263	245,026	1,703,263	1,703,263	1,703,263	66.7	2,086,609	1,666,609	1,666,609	1,666,609		
Western Pacific	293	5,858,252	41,735	6,271,749	865,742	1,159,373	245,026	1,703,263	245,026	1,703,263	1,703,263	1,703,263	66.7	2,086,609	1,666,609	1,666,609	1,666,609		
Western Pacific	293	5,858,252	41,735	6,271,749	865,742	1,159,373	245,026	1,703,263	245,026	1,703,263	1,703,263	1,703,263	66.7	2,086,609	1,666,609	1,666,609	1,666,609		
Western Pacific	293	5,858,252	41,735	6,271,749	865,742	1,159,373	245,026	1,703,263	245,026	1,703,263	1,703,263	1,703,263	66.7	2,086,609	1,666,609	1,666,609	1,666,609		
Western Pacific	293	5,858,252	41,735	6,271,749	865,742	1,159,373	245,026	1,703,263	245,026	1,703,263	1,703,263	1,703,263	66.7	2,086,609	1,666,609	1,666,609	1,666,609		
Western Pacific	293	5,858,252	41,735	6,271,749	865,742	1,159,373	245,026	1,703,263	245,026	1,703,263	1,703,263	1,703,263	66.7	2,086,609	1,666,609	1,666,609	1,666,609		
Western Pacific	293	5,858,252	41,735	6,271,749	865,742	1,159,373	245,026	1,703,263	245,026	1,703,263	1,703,263	1,703,263	66.7	2,086,609	1,666,609	1,666,609	1,666,609		
Western Pacific	293	5,858,252	41,735	6,271,749	865,742	1,159,373	245,026	1,703,263	245,026	1,703,263	1,703,263	1,703,263	66.7	2,086,609	1,666,609	1,666,609	1,666,609		
Western Pacific	293	5,858,252	41,735	6,271,749	865,742	1,159,373	245,026	1,703,263	245,026	1,703,263	1,703,263	1,703,263	66.7	2,086,609	1,666,609	1,666,609	1,666,609		
Western Pacific	293	5,858,252	41,735	6,271,749	865,742	1,159,373	245,026	1,703,263	245,026	1,703,263	1,703,263	1,703,263	66.7	2,086,609	1,666,609	1,666,609	1,666,609		
Western Pacific	293	5,858,252	41,735	6,271,749	865,742	1,159,373	245,026	1,703,263	245,026	1,703,263	1,703,263	1,703,263	66.7	2,086,609	1,666,609	1,666,609	1,666,609		
Western Pacific	293	5,858,252	41,735	6,271,749	865,742	1,159,373	245,026	1,703,263	245,026	1,703,263	1,703,263	1,703,263	66.7	2,086,609	1,666,609	1,666,609	1,666,609		
Western Pacific	293	5,858,252	41,735	6,271,749	865,742	1,159,373	245,026	1,703,263	245,026	1,703,263	1,703,263	1,703,263	66.7	2,086,609	1,666,609	1,666,609	1,666,609		
Western Pacific	293	5,858,252	41,735	6,271,749	865,742	1,159,373	245,026	1,703,263	245,026	1,703,263	1,703,263	1,703,263	66.7	2,086,609	1,666,609	1,666,609	1,666,609		
Western Pacific	293	5,858,252	41,735	6,271,749	865,742	1,159,373	245,026	1,703,263	245,026	1,703,263	1,703,263	1,703,263	66.7	2,086,609	1,666,609	1,666,609	1,666,609		
Western Pacific	293	5,858,252	41,735	6,271,749	865,742	1,159,373	245,026	1,703,263	245,026	1,703,263	1,703,263	1,703,263	66.7	2,086,609	1,666,609	1,666,609	1,666,609		
Western Pacific	293	5,858,252	41,735	6,271,749	865,742	1,159,373	245,026	1,703,263	245,026	1,703,263	1,703,263	1,703,263	66.7	2,086,609	1,666,609	1,666,609	1,666,609		
Western Pacific	293	5,858,252	41,735	6,271,749	865,742	1,159,373	245,026	1,703,263	245,026	1,703,263	1,703,263	1,703,263	66.7	2,086,609	1,666,609	1,666,609	1,666,609		
Western Pacific	293	5,858,252	41,735	6,271,749	865,742	1,159,373	245,026	1,703,263	245,026	1,703,263	1,703,263	1,703,263	66.7	2,086,609	1,666,609	1,666,609	1,666,609		
Western Pacific	293	5,858,252	41,735	6,271,749	865,742	1,159,373	245,026	1,703,263	245,026	1,703,263	1,703,263	1,703,263	66.7	2,086,609	1,666,609	1,666,609	1,666,609		
Western Pacific	293	5,858,252	41,735	6,271,749	865,742	1,159,373	245,026	1,703,263	245,026	1,703,263	1,703,263	1,703,263	66.7	2,086,609	1,666,609	1,666,609	1,666,609		
Western Pacific	293	5,858,252	41,735	6,271,749	865,742														